The acquisition, development and maintenance of online sports betting

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Copyright statement

Statement of originality

I declare that the work presented in this thesis is, to the best of my knowledge and belief, original and my own work, except as acknowledged in the text. The material, presented as my own has not been submitted previously, in the whole or in part, for a degree at any other institution.

Statement of contribution of others

In cases in which the work presented in this thesis was the product of collaborative efforts, I declare that my contribution was substantial and prominent, involving the development of original ideas, as well as the definition and implementation of subsequent work. Detailed information about my contribution to collaborative work in this thesis is outlined in Appendix A.

Abstract

Sports betting is now the most popular online gambling activity in Europe. The growth of this industry has been attributed to technological advancements and innovations, such as betting via a smartphone and in-play betting. These new advancements have given sports bettors the facility to bet anywhere, anytime, and on hundreds, if not thousands of discrete events. Moreover, the UK has seen a significant increase in the volume of advertising for sports betting products. The growth of sports betting marketing, together with developments in technology, has resulted in concerns about the potentially negative effects of this gambling activity. Therefore, the overall aim of the research presented in this thesis was to contribute to the understanding of online sports betting, particularly in terms of the impact of newer features of online sports betting and sports betting advertising.

The aims of this thesis were addressed through four stages of research employing a mixed methods approach including a scoping study, a content analysis study (of 3,375 tweets on social media), in-depth interviews with sports bettors (n=19), and a comprehensive online survey of sports bettors (n=643). Data across the studies were analysed using thematic analysis, principal component analysis, latent class analysis, and multiple regression.

The first empirical study within this thesis was a scoping study that systematically reviewed the existing literature on in-play sports betting and quantified the prevalence of these features by examining online sports betting websites. The findings of the review indicated that in-play sports betting has the potential to be more harmful than other forms of gambling (e.g., gambling on fixed odds) because of the inherent structural characteristics.

Study 2 was a content analysis that examined how gambling operators marketed their products on Twitter. The results highlighted that Twitter serves as a platform where gambling operators market their products in a normalised and positive way. The findings also highlight that over 90% of the tweets contained no responsible gambling information.

Studies 3 and 4 were qualitative explorations of online sports betting. Study 3 explored the perceived impact of sports betting marketing. The study identified the sports betting inducements perceived to be most influential on sports betting behaviour, and highlighted the pervasive nature of sports betting advertising across multiple marketing platforms. Study 4 examined opinions and attitudes towards in-play betting and the 'cash out' feature. Overall, in-play sports betting was viewed favourably and easily accessible. However, the findings

demonstrated that this is a way of gambling that can be played without interruption and which may lead to repetitive (i.e., continuous) gambling and/or unwarranted feelings of control.

Study 5 used latent class analysis to identify five classes of modes used to access sports betting. The results from this study suggest that participating exclusively in online sports betting is not inherently associated with problem gambling. In addition, salient motivations for online sports betting were identified using items from an adapted version of the British Gambling Prevalence Survey (BGPS; Wardle et al., 2011),

Drawing together the findings from the previous chapters, the final empirical chapter (study 6), examined which factors might predict problem gambling among sports bettors. Predictors of problem gambling were identified and included higher motor impulsivity, motivations for sports betting, using a laptop to bet, betting at work, mixed mode betting, in-play and 'cash out' feature use, and sports betting advertising involvement. This thesis contributes to a greater understanding of online sports betting, and supports the contention that gambling is a multifaceted phenomenon, in which individual factors, as well as structural and situational characteristics should be considered.

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Research output stemming from the thesis

Publications

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Glossary

Term	Definition
Accumulator	A bet that involves more than one selection on a bet
Add2Bet	A live betting feature that allows gamblers the option to instantly use the cash out value of an open bet to create a new bet type combining it with new selections
Best odds guaranteed (BOG)	A promotion offered by some bookmakers that applies to horse and greyhound racing. If you take an early or a fixed odds price for your selection, you are paid out at the biggest odds
Bet builder	An automated version of manually requesting a sports bet
Betting exchange	Gamblers directly place bets against each other rather than using a traditional bookmaker
Bookmaker	Someone who facilitates gambling, most commonly on sporting events
Boosted odds/enhanced odds	The odds for a selection are improved offering a better potential payout
Cash out	An individual may have the opportunity to settle a bet before an event has ended – for a profit or loss
Complex bet type	Long-odds sports bets with a higher number of a combination of relevant possible outcomes that could happen in a specific class of events
Customised odds	Bets which give users the opportunity to customise their betting slips to varying degrees, depending on the product
Edit my Acca	A feature offered by some betting providers that allows gamblers to remove selections from their accumulator after the bet has been placed and in some instances after the selected event has started
Fixed-odds bets	Betting where the amount of money you can win does not change after the bet has been placed
Flash odds	Betting odds that are available on markets and events for a limited time only
In-play betting	Also known as 'live action' betting or 'in-running' betting - the wagering on an event that has started but not yet finished
Micro-event betting	A type of in-play betting where the outcome is determined almost immediately
Pre-match betting	Bets placed on an event before it has started
Requested odds	A feature offered by online bookmakers which allows individuals to request odds on any bet they like
Single	A bet placed on a single outcome of an event

Chapter 1: The psychology of gambling: A review of the literature

1.1 Defining gambling

Gambling (including betting) is the wagering of something of value on an event with an uncertain outcome, with the aim of gaining money or something of financial value (Williams et al., 2017). Gambling games can be broadly categorized into two types: chance-based (e.g., roulette, lottery, bingo or gambling machines), where the results are random and all players have an equal chance of winning; and the second type is skill-based gambling (e.g., playing poker, blackjack or sports betting), where ability or skill can influence the outcome of the activity. However, chance is still a great factor although to a lesser extent than in purely chance based games.

For the majority, gambling can be enjoyed in moderation. However, some people can experience problems related to their gambling (e.g., loss of control and chasing behaviour) and for a small but significant minority, gambling can result in significant repercussions, such as financial, legal, and relational problems (Latvala et al., 2019). The following section will look more specifically at gambling disorder (including definitions and diagnostic criteria) and theories of gambling disorder.

1.2 Defining gambling disorder and problem gambling

There have been ongoing debates relating to inconsistencies in the criteria, categorisation, and terminology used to diagnose a gambling disorder. Terms that have been used in an attempt to define it include: “problem”, “disordered”, “pathological”, “compulsive”, and “excessive” (Griffiths, 2007). Gambling disorder was formally classified as a psychiatric disorder when it was categorised within the residual category of disorders of impulse control in the Diagnostic and Statistical Manual of Mental Disorders (DSM-III, DSM-III-R, and DSM-IV; American Psychiatric Association, 1980; 1987; 1994; 2000).

Diagnostic criteria for gambling disorder were revised in 1987 for the DSM-III-R (American Psychiatric Association, 1987), and again in 1994 for the DSM-IV (American Psychiatric Association, 1994). In the release of the DSM-5 in 2013, the following revisions were included: (i) renaming the disorder from Pathological Gambling to Gambling Disorder; (ii) reclassification of pathological gambling from Impulse Control Disorders to a newly created category subsuming substance use and related disorders; (iii) reducing the threshold for

diagnosis from five criteria to four criteria; (iv) specifying the symptoms must be presented during a 12-month period; and (v) elimination of the illegal acts criterion (Stinchfield et al., 2016).

The diagnostic criteria for gambling disorder in the DSM-5 section 312.31 (American Psychiatric Association, 2013) are presented below:

1. Needing to gamble with increasing amounts of money in order to achieve the desired excitement.

2. Feeling restless or irritable when attempting to cut down or stop gambling.

3. Making repeated unsuccessful attempts to control, cut back or stop gambling.

4. Often experiencing preoccupation with gambling (e.g., having persistent thoughts of reliving past gambling experiences, handicapping or planning the next venture, thinking of ways to get money to gamble)

5. Often gambles when feeling distressed (e.g., helpless, guilty, anxious, depressed).

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

7. Lies to conceal the extent of involvement with gambling.

8. Jeopardising or losing a significant relationship, job or educational or career opportunity because of gambling.

9. Has relied on others to provide money to relieve desperate financial situations caused by gambling.

The use of "problem gambling", "disordered gambling" and other terminology is reflected upon on Chapter 11, Section 11.7 of this thesis.

1.3 Theories of problem gambling

Gambling is a multifaceted rather than unitary phenomenon (Griffiths, 2011) and as a result, numerous theoretical models have endeavoured to explain the aetiology of gambling behaviour and problem gambling. The development of theories of problem gambling is traditionally driven by research in biology, (cognitive) psychology, and psychiatry (Gobet & Shiller, 2011). Griffiths and Delfabbro (2001) distinguish between two broad, general perspectives; some theories highlight the importance of biological differences between individuals and others place

a stronger emphasis on the psychological determinants of gambling. These models of gambling can be separated into unitary theory models or integrated multifactorial conceptual frameworks, which often contain overlapping elements (Rickwood et al., 2010).

1.3.1 Biological models of gambling

Biological and disease theories of addiction are very similar. Whilst the disease model of addiction focuses on the differences among individuals with the disease, and those without it, the biological model highlights physiological predispositions as determining factors for gambling disorder (Carlton & Manowitz, 1988). The biological models of addiction focus on and emphasise the influence of genetic and neurochemical factors in the acquisition, maintenance and relapse of addictive behaviour. These biological elements may have a genetic component, and/or be influenced by environmental factors (Rickwood et al., 2010). These determinants may explain why only some individuals go on to develop gambling problems.

1.3.1.1 Neurochemical and genetic causes

Biological models are evidenced using comparisons between neurocognitive and biological markers of harm. Different neurotransmitter systems and receptor genes have been suggested to play a unique part in the mechanisms that are at the root of arousal, impulsivity, behavioural initiation, and reward, which have all been associated with the pathophysiology of problem gambling (Potenza, 2013; Singh et al., 2017).

Numerous researchers have examined potential indicators of biological susceptibility for problem gambling and certain susceptibility genes related to problem gambling (e.g., Ibáñez et al., 2003; Lobo et al., 2010; Lobo & Kennedy, 2009). Neurotransmitter genes are believed to be linked to the mediating acute reinforcement effects in the brain (Comings et al., 2008). The importance of neurobiological mechanisms has been referenced in numerous studies (e.g., Bullock & Potenza, 2012; Joutsa et al., 2012; Potenza, 2013). For example, dopamine is an important neurotransmitter within the brain reward system. Research has identified that those experiencing gambling problems have elevated frequencies of genetic polymorphisms that influence the dopamine system and high level of dopamine metabolites in plasma (Bergh, 1997; Lobo et al., 2014). However, the precise role of dopamine in problem gambling remains unclear (Mathar et al., 2018; Potenza, 2013).

In addition to neurotransmitter systems, multiple brain regions (e.g., ventromedial, ventral striatum and prefrontal cortex) have been implicated in gambling and problem gambling (Potenza, 2013). A meta-analysis of reward pathway dysfunction in gambling disorder using functional neuroimaging reported that during loss outcome and loss anticipation gamblers have reduced activity of the brain reward pathway (ventral striatum) and right medial-prefrontal cortex during loss-avoidance and heightened activation in part of the ventral striatum during loss anticipation (Meng et al., 2014). Overall, genetic research offers a good evidence base for a genetic vulnerability to problem gambling, but it is less understood precisely which neurotransmitters and genes are involved, and the epigenetic factors that affect gene expression (Abbott et al., 2018).

1.3.1.2 Twin studies

Published data from twin studies suggest that gambling disorder may have a hereditary basis, and that genetic factors may contribute more than environmental influences to the overall variance of risk for developing gambling disorder (Yau & Potenza, 2015). Evidence from twin studies show that genetic factors can predict 40-50% of the propensity for developing gambling disorder (Davis et al., 2018; Lobo & Kennedy, 2009; Slutske et al., 2010). However, the published heritability estimates have ranged dramatically between studies, from about 0% to 70% (Xuan et al., 2017).

A study by Slutske et al. (2010), that involved 2,889 sets of twins reported that genetic factors accounted for just under half (49.2%) of the variance in problem gambling for males and females, and shared environmental influences did not contribute to variations in problem gambling. Therefore, the findings suggest that genetic influences may be more important than shared environmental influences in the development of gambling disorder. A review of the genetics of problem gambling by Gyollai et al. (2014) argued that twin studies consistently provide evidence that genetic factors contribute to the formation of problem gambling, while environmental factors do not.

1.3.2 Behavioural theories

Behavioural theories incorporate the roles of punishments, rewards and associational learning, and explains persistent gambling as a conditioned process. The fundamental principle of learning models is that gambling behaviour is guided by contingencies of reinforcement under

instrumental (operant) and classical conditioning paradigms (Rickwood et al., 2010; Delfabbro, 2013).

In operant explanations for problem gambling, compulsive gamblers fall prey to intermittent schedules of reinforcement, most likely the variable-ratio schedules (where only a proportion of responses are reinforced after an uncertain number of responses) that are inherent in all games of chance (Cornish, 1978; Skinner, 1953). Intermittent wins that are delivered on a variable ratio then produce a state of physiological arousal, and after repetition, this arousal becomes associated with, i.e. classically conditioned, to stimuli linked with the gambling environment (Sharpe & Tarrier, 1993). Other reinforcements may be psychological (e.g., increasing self-esteem) or financial (e.g., winning money) (Griffiths, 1999a). In addition, negative reinforcement provides escape from aversive depression and anxiety states (Rickwood et al., 2010).

Advocates of classical conditioning models posit that individuals maintain their gambling as a result of the reinforcing effects of gambling that also contribute to its increase (Anderson & Brown, 1984). Due to being conditioned to the arousal experienced when gambling, individuals feel unstimulated or experience boredom in situations where they are not gambling (Griffiths & Delfabbro, 2001).

The operant and classical models have been important in the establishment of measures of "impaired control" over gambling (Griffiths & Delfabbro, 2001), and both perspectives have led to the development of clinical interventions using imaginal desensitization (McConaghy et al., 1983), response prevention (Symes & Nicki, 1997), and aversive conditioning (Barker & Miller, 1968; Koller, 1972).

Operant conditioning might explain the maintenance of gambling behaviour, but it does not clarify why individuals start gambling or resume gambling after a long duration of abstinence (Walker, 1992). Meanwhile, classical conditioning theory offers an explanation as to why individuals are motivated to start a gambling session but seems less applicable when explaining sustained gambling behaviour. Behavioural theories do not tend to recognise the role of internal events, as they often minimise the role of individual perceptions, motivation, and emotions to influence results (Raylu & Oei, 2002; Rickwood et al., 2010). Therefore, although learning theories offer some explanation into the acquisition and maintenance of persistent gambling, and offer some insight into clinical interventions, researchers (e.g., Rickwood et al., 2010;

Griffiths & Delfabbro, 2001) argue that learning theories are an insufficient conceptual framework for problem gambling.

1.3.3 Need-state models and theories of addiction

Need-state theories of gambling assume that people gamble in order to avoid unpleasant feelings such as depression, boredom and anxiety (Blaszczynski & Nower, 2002; Griffiths & Delfabbro, 2001). The theory proposes that susceptibility to addiction occurs in response to individual vulnerabilities and the extent to which the gambling experience contributes to individuals addressing underlying psychological issues (Delfabbro, 2013). McCormick (1988) distinguished between under-stimulated gamblers who gamble in order to modify a state of boredom, and over-stimulated gamblers who gamble in order to decrease the level of their arousal. Individuals may maintain their gambling behaviour due to being conditioned to the arousal or excitement experienced when gambling, and might feel unstimulated, or bored, in situations where they are not gambling. Although, as Griffiths and Delfabbro (2001) argue, it is not clear why certain people have a stronger requirement for arousal or gambling as a coping strategy and whether this theory sufficiently adds to the understanding of both recreational and problem gambling.

1.3.4 Cognitive theories

Some researchers stress the importance of irrational thinking and erroneous beliefs in the aetiology and maintenance of problem gambling behaviours (e.g., Griffiths, 1990; Ladouceur & Walker, 1996; Toneatto et al., 1997, 1999). Cognitive theories suggest that gamblers hold a set of false erroneous beliefs about gambling that assists in maintaining their gambling despite continuous losses. These erroneous beliefs have been identified as being a significant element of gambling disorder (Blaszczynski & Nower, 2002) which are frequently endorsed by individuals with gambling problems (e.g., Lakey et al., 2007; Michalczuk et al., 2011). Gamblers have biases that lead them to believe that their betting choices, their actions, or their personal attributes are likely to influence the outcome and which cause them to overestimate their chance of winning (Griffiths, 1994; Walker, 1992). Toneatto (1999) summarised several types of cognitive distortions that are held by pathological gamblers:

- Superstitious beliefs refer to the perception that specific cognitions, objects, and behaviours can influence gambling results;
- Interpretive biases relate to attributing positive or negative gambling outcomes to external or internal events in order to encourage further play. Examples of such biases include:

gambler's fallacy, chasing, internal attributions, external attributions, reframed losses, hindsight bias;

- Selective memory refers to selectively recalling or remembering wins, and difficulty remembering losses;
- Predictive skill refers to the use of internal (such as "gut" feelings) and external cues (such as omens) as prognostic cues to guide gambling decisions and predict gambling outcomes.
- Temporal telescoping is the tendency to believe that wins are closer, temporally, which may result in gamblers playing for an extended period of time, because they believe that they are eventually going to win;
- Illusion of control that refers to tendency to overestimate personal ability/skills to control the result of the game
- Illusory correlation that refers to the perception of a relationship between two variables such as features of the environment and gambling outcomes even when no such relationship exists.

There is a large body of research that supports the role of dysfunctional cognitions in the development and maintenance of problem gambling (e.g., Gaboury & Ladouceur, 1989; Hardoon et al., 2001; Nicholson et al., 2016). A positive association between cognitive distortions and gambling severity has been reported (Miller & Currie, 2008). For example, Toneatto et al. (1997) assessed the prevalence and nature of cognitive distortions in a sample of heavy or problem gamblers and reported that a multitude of cognitive distortions were associated with playing games of skills (e.g., sports betting, cards) than ones that did not (e.g., lotteries). Gambling motives may also activate cognitive distortions, particularly the illusion of control (Delfabbro et al., 2006).

There is still a need for research which examines the irrational cognitions predominant in each type of gambling activity and the ways in which they influence behaviour (Raylu & Oei, 2002), in addition to research exploring cultural or gender differences in cognitions which is currently lacking in the literature (Oei et al., 2008). Moreover, cognitive theories do not currently clarify the relationship between arousal, conditioning, and cognitions, nor the transition from recreational gambling into problem gambling (Raylu & Oei, 2002; Rickwood et al., 2010).

1.3.5 Cognitive-behavioural theories

Behavioural and cognitive theories are not mutually exclusive but involve behavioural with cognitive elements to explain the maintenance of gambling problems. Sharpe and Tarrier (1993)

presented a heuristic behavioural and cognitive model of problem gambling. Cognitive behavioural theorists believe that purely behavioural explanations of the development and maintenance of gambling problems are inadequate. Sharpe and Tarrier (1993) argue that previous explanations for problem gambling lacked clinical value and have been primarily descriptive. Moreover, these explanations have not delineated the mechanisms or processes that occur and result in gambling becoming problematic, and have not specified the relationship between the various components (Rickwood et al., 2010).

The cognitive-behavioural model (Sharpe & Tarrier, 1993) argues that initial gambling is prompted by operant and classical conditioning, it is then reinforced through autonomic arousal and financial rewards. Autonomic arousal is increased excitement responses in the body such as an increased heart rate. This arousal then becomes linked to monetary gains for frequent gamblers. Through a system of reward patterns, the gambling is maintained long enough for associations to be developed through classical conditioning. Gamblers begin to develop gambling-related cognitions (e.g., 'feeling lucky' and accepting losses on the basis of future winning) that increase the chance that they will continue gambling. As a result, individual's thoughts, the environment, and the level of arousal become triggers to gamble. Whether or not a gambler can ignore the trigger depends on the gambler's coping skills (or lack of) that result in vulnerability to craving and relapses. This model differs from earlier models because it considers how three components work together in the development of problem gambling: (1) levels of arousal; (2) behavioural, such as coping strategies; and (3) cognitive beliefs about gambling. When using this model, a clinician can design a treatment plan that can help an individual experiencing gambling problems improve their coping skills, decrease autonomic arousal, and change their gambling-related behaviour and thoughts.

Previous research has shown that negative cognitions, avoidance coping, and gambling cognitions often interact with one another (e.g., Casey et al., 2008; Raylu & Oei, 2002). Oei and Raylu (2015) found that gambling cognitions, negative psychological states such as anxiety and depression, gambling urge, and avoidance coping played a role in gambling behaviour and gambling problems, thus, supporting cognitive-behavioural conceptualisation of gambling behaviour.

1.3.6 Biopsychosocial model

Gambling is a multifaceted rather than unitary phenomenon (Griffiths & Delfabbro, 2001). Subsequently, multiple influences may be relevant at different points (e.g., biological, social or psychological; Griffiths & Delfabbro, 2001). The biopsychosocial model is an interdisciplinary model that is used to explain the initiation and maintenance of gambling behaviour (Sharpe, 2002). The model builds upon the disease model by including brain abnormalities that effect functioning, and further expand the model by including the subjective psychological experience of the individual. This approach posits that there is a complex interconnection between biology, psychology and socio-environmental factors that protect from and contribute to individuals developing addictive behaviour (Williams et al., 2012a). While many of the components in this model are psychological, it also observes social factors such as the reinforcement of gambling through various interpersonal relationships and the availability of gambling.

This etiological model recognises that early experiences with gambling and biological factors may interact with psychological influences, including impulsivity, to advance the acquisition of problem gambling behaviour (Sharpe, 2002; Sharpe & Tarrier, 1993). Gambling cognitions may then develop through recurring exposure and conditioning, resulting in the maintenance of problematic gambling behaviour. The psychological needs addressed through gambling are important elements that influence the initial decision to start gambling and the subsequent progression to problem gambling (Williams et al., 2012a).

1.3.7 The Pathways Model

The pathways model of problem gambling (Blaszczynski & Nower, 2002) is a multidisciplinary model which integrates biological, developmental, environmental, cognitive, and personality factors in a theoretical framework. The model posits that pathological gamblers are a heterogenous group that can be subtyped based on their underlying motivations to gamble. The pathways model proposes three developmental pathways to problem gambling, separated by a set of pre-disposing risk factors and repercussions from gambling: (i) behaviourally conditioned problem gamblers, (ii) emotionally vulnerable problem gamblers, and (iii) biologically vulnerable problem gamblers. Across all three subtypes, the pathways to problem gambling start with availability and access to gambling. The pathways then diverge in the triggers, motivations, and behaviours that lead these people to persist in their gambling and develop problems.

Pathway 1 gamblers (behaviourally conditioned problem gamblers) alternate between heavy and problem gambling as a result of conditioning, faulty cognitions, and/or poor-decision making. This group demonstrate motivation to enter treatment and may successfully regain controlled levels of gambling following treatment. Pathway 2 gamblers (emotionally vulnerable problem gamblers) occur as a result of interactions between the learning process (Pathway 1) and emotional and biological vulnerabilities. This subgroup primarily gamble in order to "relieve aversive affective states by providing escape or arousal" (Blaszczynski & Nower, 2002, p.494). Pathway 3 ('antisocial impulsivist' problem gamblers) includes the same interaction as Pathways 1 and 2, but this group is also characterised by "biological vulnerability toward impulsivity, early onset, attentional deficits, antisocial traits and poor response to treatment" (p.492). The biological vulnerability means that this subgroup has behavioural control issues in other areas of their life in addition to gambling, are more likely to experience substance abuse issues, and have poor interpersonal relationships.

Several studies have provided empirical evidence supporting the pathways model with adult samples (e.g., Nower et al., 2013; Valleur et al., 2016) and with studies using a longitudinal design (Allami et al., 2017; Mader et al., 2019). A recent systematic review by Kurilla (2021) set out to determine the validity of subtyping gamblers based on the pathways model of problem gambling and found good empirical support for the three gambling subtypes. However, differences have been reported when applying the model to an adolescent sample (Gupta et al., 2013) and there may be at least four gambler subtypes for this age group (Kurilla, 2021).

1.3.8 Summary of theories of problem gambling behaviour

In conclusion, no single or integrated model of gambling can fully explain the causal factors involved in the development of problem gambling or gambling disorder. Although, integrated models that consider the multifactorial biopsychosocial variables have gained prominence over the years (Rickwood et al., 2010). These models that have hypothesized the potential aetiology of gambling disorder have included a combination of genetic, biological, psychological and sociological factors that may contribute to gambling disorder. However, these models focus on the individual, and view individual action as the principal basis for problem gambling and do not consider the role of the gambling environment. McCormack and Griffiths (2013) argue that gambling behaviour could be conceptualised as a function of individual factors, situational factors and structural characteristics of the game that determines participation in the gambling activity.

1.4 Structural and situational characteristics of gambling

Gambling operators have employed numerous design features including the structural and situational characteristics (Cornish, 1978; Griffiths, 1993; Griffiths & Auer, 2013; Griffiths & Parke, 2003; Newall et al., 2021a; Parke & Griffiths, 2007) to lure individuals to gamble and to maintain their gambling (Parke & Griffiths, 2007). Situational characteristics refer to factors external to the gambler and include the social and physical settings that individuals are situated in while gambling both online or offline (McCormack & Griffiths, 2013). Situational factors that can influence gambling behaviour can include features of the environment such as accessibility, availability, exposure, and contextual factors such as marketing, advertising, alcohol and tobacco (Abbott, 2007) as well as interior aspects of the gambling venue (e.g., decoration, lighting, and heating). Structural characteristics, on the other hand, refer to the design features of the gambling product that can affect the way gamblers interact with it (Parke & Griffiths, 2007). Examples of structural characteristics include stake size, jackpot size, and near miss opportunities (Parke & Griffiths, 2007).

1.4.1 Structural characteristics

The 'structural characteristics' that are related to features of a gambling activity that facilitate gambling behaviour regardless of the person's physiological, psychological or socioeconomic status, have been shown to play a significant part in explaining the appeal of gambling activities. They are responsible for reinforcement and facilitate excessive gambling (Griffiths, 1999b). Griffiths (1993) suggested that the structural characteristics may lead to the acquisition, development and sustainment of gambling behaviours. Overall, empirical findings suggest that gambling behaviour and game preference are related to the structural characteristics of a game.

It has been argued that gambling research from neuroscience and medicine has often ignored the impact of product features, even though gambling harms differ across various forms of gambling, in a way that may be explained by the underlying structural characteristics (Brooks et al., 2020). Griffiths and Auer (2013) proposed that the most important factors relating to the likelihood of a person experiencing gambling problems, as well as individual risk factors and susceptibility of the individual gambler, are the structural characteristics associated with the speed and frequency of the game. Structural characteristics such as reward distribution, event frequency, and payout interval have often been linked to the development of gambling behaviours that are difficult to stop (Dowling et al., 2005). This is supported by a review by

Harris and Griffiths (2018) who found that fast-paced games are particularly attractive to those with gambling problems. Griffiths and Auer (2003) suggested that the payout interval, the event duration, bet frequency, and event frequency are more important than the type of game played. In accordance with learning theory, gambling behaviour becomes conditioned to particular structural characteristics through classical and operant conditioning (Blaszcynski & Nower, 2002) and these processes may form and maintain gambling behaviour over time.

McCormack and Griffiths (2013) suggest that gambling behaviour could be conceptualised as a function of individual factors, situational factors and structural characteristics of the game that determines participation in the activity. By identifying particular structural and situational characteristics, it may be possible to see how thoughts about gambling are influenced and distorted, see how needs are identified, and understand player motivations and what influences how they gamble (Griffiths, 2003).

1.4.2 Situational characteristics

Situational characteristics are predominantly features of the environment and they may be important in the initial decision to gamble (Griffiths, 1999b) and in some cases may facilitate further gambling (Griffiths & Parke, 2003). Hayer and Griffiths (2015) argue that these environmental features encompass important dimensions including accessibility, availability, and acceptability.

These situational factors include environmental attributes that may make gamblers feel more psychologically and physically comfortable (Griffiths, 1999b). Such features include the number of gambling outlets in a certain location, the location of these gambling outlets, and the use of advertising in encouraging individuals to gamble (Cornish, 1978), sensory factors (e.g., music, colour, smell in the environment, and sound effects), advertisements that encourage individuals to gamble (Hayer & Griffiths, 2015), the novelty of the activity and social facilitation (the presence or absence of other people in the vicinity) (Griffiths, 1995). These variables may help explain why some types of gambling are more appealing to certain socio-economic groups (Griffiths et al., 1999b).

1.5 Summary and conclusions

For the majority of the adult population, gambling is a recreational activity that can be played responsibly. However, a small minority of the population experiences gambling-related harm.

For these few, gambling-related harms can affect multiple domains of life, including interpersonal relationships (Matthews & Volberg, 2013), financial (Castrén et al., 2013), and health (Latvala et al., 2019). To date, there is no widely accepted causal explanation or single conceptual theoretical model of gambling that adequately accounts for the aetiology of problem gambling (Blaszczynski & Nower, 2002; Griffiths & Delfabbro, 2002; Rickwood et al., 2010). As Abbott et al. (2004, p.96) argue "no theoretical framework is sufficiently complex and inclusive to take account of the wide array of agent, environmental and host factors that contribute to problem development, maintenance and cessation".

1.6 Aims of the thesis

Due to the fact that there is an absence of empirical information about newer online sports betting features, marketing influences on sports betting, and characteristics of problematic sports bettors, it is currently unknown which features are most positively associated with problematic sports betting behaviour. Although there is evidence to suggest that certain features may be associated with problem gambling, there is insufficient research to say what features have the greatest impact on problematic sports betting behaviour. Consequently, the aim of this thesis was to develop an understanding of online sports betting, particularly with regard to the newer online sports betting features such as in-play betting and 'cash out', the motivations for online sports betting, the influence of sports betting advertising on sports betting behaviour, and an overview of the demographic characteristics of online sports bettors. This research aimed to explore online sports betting using a mixed methods approach, utilising a scoping study, a content analysis of online gambling marketing, in-depth interviews with sports bettors, and a comprehensive online survey distributed internationally, to uncover online sports betting behaviour. The main aims were to establish:

(i) How are structural characteristics of in-play sports betting associated with problematic gambling behaviour?
(ii) How does sports betting advertising influence online sports betting behaviour?
(iii) What are the most salient risk factors for engaging in online sports betting?

1.6.1 Thesis structure

Chapter 1 has introduced gambling, and has provided a definition for gambling disorder, a brief overview of the psychology of gambling, and a description of how problem gambling is

explained by various theoretical models. Chapter 1 concludes with a statement of thesis aims and objectives.

Chapter 2 is a review of the literature that introduces sports betting; provides an overview of the prevalence of problem gambling in sports bettors; discusses the demographic characteristics of sports bettors; provides an overview of the situational and structural characteristics of sports betting; and highlights the importance of examining the newer features of online sports betting.

Chapter 3 addresses the literature pertaining to sports betting advertising through a narrative literature review. This chapter discusses the content, delivery, and impact of sports betting advertising. This chapter also maps out the current state of knowledge of the risks associated with sports betting advertising.

Chapter 4 explains the methodological approaches underpinning the research studies. The methodology chapter justifies the use of mixed methods, as well as discussing ethical considerations. This chapter incorporates some key methodological debates and the underpinning research paradigm philosophies. The specific methodology used in each empirical study will be further elaborated in the relevant chapters.

Chapters 5, 6, 7, 8, 9 and **10** are empirical chapters. Each of these empirical chapters outline the specific rationale underpinning the individual investigation, methods, findings, discussion, and conclusion. **Chapter 5** is a scoping review of in-play sports betting that (i) systematically reviews academic and non-academic 'grey literature' and (ii) empirically examines online sports betting websites to quantify the prevalence of in-play betting features. This chapter contributed to the development of the in-play betting qualitative study (Chapter 8). This chapter was published in the *International Journal of Mental Health and Addiction* (Killick & Griffiths, 2019).

Chapter 6 comprises the second empirical study and outlines how gambling operators promote their gambling products on Twitter, how these operators interact with their followers, and the implication that the findings may have on the regulation of sports betting advertising via Twitter. This study was published in the *Journal of Gambling Studies* (Killick & Griffiths, 2020a).

Chapters 7 and 8 present sports bettors' perceptions of the impact of sports betting marketing, and attitudes and opinions towards newer features of online sports betting. These chapters were published in the *International Journal of Mental Health and Addiction* (Killick & Griffiths, 2020b) and the *Journal of Gambling Studies* (Killick & Griffiths, 2021), respectively.

Chapter 9 examines the relationship between the demographic characteristics of online sports bettors, individual motivations for online sports betting, the type of platform used to place bets, and problem gambling severity among a sample of international sports bettors.

Chapter 10 empirically examines which factors predict problem gambling among sports bettors. More specifically, this study examines the relationship between problem gambling and salient risk factors for online sports betting that have been identified through the qualitative interview chapters (Chapters 7 and 8).

Chapter 11 contains a general discussion. This synthesises the findings from each empirical investigation. Moreover, it provides suggestions and avenues for future research, and outlines the practical and theoretical implications of the thesis findings.

Chapter 2: Online sports betting

2.1 Sports betting

2.1.1 An overview of sports betting

Sports betting is a gambling activity that involves placing a wager on the outcome of a particular sporting event. The first high street betting shops in the UK were opened in 1961, following the passage of the 1960 Gambling Act (Jones et al., 1994). Gambling operations moved online in the 1990s, and the first online sports betting site was launched by Eurobet in 1996, with others soon following (Williams et al., 2012b). There are now over 80 online bookmakers licensed to operate in Great Britain and more than 7,000 high street betting shops (Gambling Commission, 2020).

There are several different ways in which sports betting can be offered as outlined by the Gambling Commission:

(i) Fixed-odds betting: This is the most common form of betting where individuals wager on an event to win a fixed amount calculated by the odds available. The odds are typically offered by a bookmaker, a betting exchange, or an individual. Fixed-odds betting can take place in betting shops, by remote means (including online gambling), and at venues (e.g., sports stadiums).

(ii) Pool betting: Players pay a fixed price into a pool, and select the outcome. The pool is then divided between those that have predicted the correct selection. Pool betting includes football and other sports pool betting, racecourse pool betting, and fantasy football type competitions.

(iii) Spread betting: Gamblers predict what will happen in a specified market for a given sports event, and whether the outcome will be greater or less than a 'spread' offered by a spread betting firm. The Gambling Commission is responsible for regulating all gambling activities in Great Britain apart from spread betting, which is regulated by the Financial Conduct Authority.

(iv) Via a betting intermediary: An individual facilitates betting between two or more parties but does not, themselves, partake in the bet.

Another form of sports betting, which is similar to fixed-odds sports betting, is in-play sports betting. While traditional fixed-odds betting takes place before an event happens, "in-play betting, also known as 'live action' betting or 'in-running' betting, refers to the wagering on an

event that has started but not yet finished. Here, gamblers have the option to continue to bet once an event has started, and adapt their bets depending on how the event is progressing (e.g., on a sporting event such as a football or cricket match)" (Killick & Griffiths, 2019, p.1457).

2.1.2 Prevelance of online sports betting

Online gambling (sometimes referred to as remote gambling) is the largest combined sector by gross gambling yield (GGY) in Great Britain (Gambling Commission, 2020). Online casino games are the most popular online gambling activity in Great Britain, followed by sports betting (Gambling Commission, 2020). Prevalence surveys have indicated that the popularity of online gambling in Great Britain is increasing (Gambling Commission, 2020). The Gambling Commission, that is the government organisation responsible for regulating gambling and supervising gambling law in Great Britain, conducted a prevalence survey of gambling behaviour in 2019 (Gambling Commission, 2020). Of the 4,004 adults surveyed, one-fifth (21%) reported gambling online in the previous four weeks (Gambling Commission, 2020). This was a significant increase from the 18% of participants who indicated that they had gambled online in 2018 (Gambling Commission, 2019). The prevalence survey also reported that the most popular way to access online gambling is via a smartphone. The second most popular method of accessing online gambling is by via a laptop (Gambling Commission, 2020).

The same Gambling Commission prevalence survey (2020) reported that 6.7% (n=268) of those surveyed had engaged in sports betting in the previous four weeks (Gambling Commission, 2020). Of these, 81% of sports bets were placed online and 27% were placed in-person. This was a 9% increase for online betting from 2018 and a 13% decrease in in-person participation. The survey also indicated that just over one-fifth (21%) of online gamblers had placed an in-play bet during the previous four weeks. Overall, the prevalence survey indicated that placing sports bets online is growing in popularity, whilst the number of individuals placing bets in-person at a high street bookmaker is decreasing in Great Britain (Gambling Commission, 2020).

2.1.3 Rate of problem gambling among sports bettors

Numerous prevalence studies of gambling have been conducted, offering general population estimates of participation in various types of gambling and gambling-related problems. These studies have also provided data on the strength of the relationships between participation in various gambling activities and problem gambling, as well as specifying which demographic and social groups are at higher risk of experiencing gambling-related problems. A systematic

review of the prevalence of adult problem gambling reported that problem gambling rates vary between 0.12-5.8% worldwide and 0.12-3.4% in Europe (Calado & Griffiths, 2016). This variation in rates is predominantly due to the problem gambling screening instrument employed and the type of survey used to collect the data. For example, the systematic review identified studies that used many different problem gambling screening instruments including the South Oaks Gambling Screen (SOGS; Lesieur & Blume, 1987), the Problem Gambling Severity Index (PGSI; Ferris & Wynne, 2001), and the American Psychiatric Association's Diagnostic criteria for pathological gambling (DSM-IV). These separate problem gambling screens result in varying rates of problem gambling (Calado & Griffiths, 2016). Moreover, it is important to note that different survey vehicles were used. For example, Griffiths (2014a) noted that the British Gambling Prevalence Survey (Wardle et al., 2011b) focused solely on gambling behaviours, whilst the Health Survey for England (HSE, Wardle et al., 2014) collected data on a number of health-related issues in which gambling was one of many areas investigated.

A recent prevalence survey conducted by the Gambling Commission (2021) used the short-form Problem Gambling Severity Index (PGSI mini-screen; Williams & Volberg, 2012) to examine the prevalence of problem gambling in Great Britain (n=4,007). The results indicated that the overall prevalence of problem gambling is 0.3%, whilst 0.9% of participants were categorised as moderate-risk gamblers, and a further 2% were categorised as low-risk gamblers (Gambling Commission, 2021).

Participation in some gambling forms, e.g., electronic gaming machines (EGMs), casino games, sports betting and horse race betting, are much more closely associated with problem gambling than other gambling forms (e.g., lotteries and weekly sports/horse pools) (Binde et al., 2017; Mazar et al., 2020; Williams et al., 2012a). In a cross-sectional study of 4,688 Australian gamblers, sports betting was most commonly highlighted as participants' most problematic form of gambling (Hing et al., 2014a). Winters and Derevensky (2019) reported that recent prevalence surveys of sports bettors that have screened for problem gambling, and included online forms of sports betting, reported significantly higher prevalence rates of problem gambling than are typically reported in population-wide estimates.

A national gambling survey administered in the United States in 2018 (n=3,000) measured problem gambling using four problem gambling items selected from the DSM-5 and found that sports bettors were three times more likely to exhibit problem gambling behaviours than other types of gamblers (National Council on Problem Gambling, 2021). The National Opinion

Research Center conducted an online survey with 500 Spanish individuals who had gambled online in the previous 12 months and participants completed the DSM Screen for Gambling Problems (NODS; Gerstein et al., 1999). Individuals who indicated that they had engaged in online sports betting had a prevalence rate of gambling disorder reported to be 16.2%, and problem gambling 13.2% (Dirección General de Ordenación del Juego, 2016). These rates were only higher for individuals who gambled on online internet games and internet poker (Dirección General de Ordenación del Juego, 2016). Moreover, the rate of problem gambling among sports bettors was found to be more than twice as high as gamblers in general.

2.2 Demographic characteristics of sports bettors

There are numerous factors that influence patterns of gambling participation, problem gambling and wider gambling-related harm (Abbott, 2020). Studies have investigated a range of risk factors amongst sports bettors, such as demographic characteristics (e.g., Hing et al., 2016a; Hing et al., 2017a; Russell et al., 2019a, 2019b), marketing influences (e.g., Hing et al., 2017b; Sproston et al., 2015), peer group influence (e.g., Gordon et al., 2015; Lamont & Hing, 2020), betting behaviours (e.g., Braverman & Shaffer, 2010; LaBrie & Shaffer, 2011), and a range of psychological risk factors (e.g., Cooper et al., 2021; Fang & Mowen, 2009; Russell et al., 2019a). Identifying characteristics of sports bettors who experience gambling problems is important for prevention, early intervention, and the development of suitable treatment plans (Hing et al., 2016a).

2.2.1 Gender differences

Young adult males have been identified as at risk of experiencing gambling problems across all types of gambling activity (Hing et al., 2016a; Johansson et al., 2009; Williams et al., 2012b). Being male is also a relevant risk factor for sports betting (e.g., Hing et al., 2016a; Humphreys & Perez, 2012; Wardle & Seabury, 2012). Gender differences in gambling appear to occur as early as young adulthood. However, little is understood about the risk factors accounting for these differences in gambling involvement (Wong et al., 2013). Some research has suggested that men may be more likely to experience gambling problems due to certain personality traits including higher levels of risk-taking, being more impulsive (Wong et al., 2013), and exhibiting higher levels of sensation seeking (Echeburua et al., 2011; Ibáñez et al., 2003).

Gambling has traditionally been viewed as a predominantly male activity, but prevalence surveys have indicated that high proportions of women gamble (Castrén et al., 2018; Wardle

et al., 2007). However, females typically engage in sports betting less frequently than males (Håkansson & Widinghoff, 2020; Humphreys & Soebbing, 2012; McCormack et al., 2014; Welte et al., 2002; Wood & Williams, 2011). A recent online survey (n=327) of online gamblers reported that men were significantly more likely to report sports betting, while females were more likely to report playing online casino, land-based casino, and online bingo (Håkansson & Widinghoff, 2020). These findings are consistent with previous research that has indicated that males tend to prefer strategy-based and sports-related gambling, while women prefer non-strategic games like bingo, lottery, and slot machines (McCormack et al., 2014; Svensson & Romild, 2014; Welte et al., 2002; Wenzel & Dahl, 2009). Winters and Derevensky (2019) suggest that this difference in sports betting between genders may be the result of several factors, less attention paid to sports by females and an absence of social networks that are influenced by an involvement and interest in sports.

While much of the research to date has emphasised male problem sports bettors, a more recent important finding is that a significant proportion of females are classed as problem sports bettors. For example, in McCarthy et al.'s (2018) Spanish study, three quarters (75%) of women who engaged in sports betting were categorised as either at-risk, or problem gamblers, and over a third (39.3%) being categorised as problem gamblers. Similarly, a study of Spanish sports bettors identified that almost of third (32%) of those classified as problem gamblers were female (Lopez-Gonzalez et al., 2019a). Although sports betting amongst females is less prevalent, there is growing evidence demonstrating that female sports gamblers experience more severe gambling problems than males (Lopez-Gonzalez et al., 2020), challenging stereotypical representations of female and male gambling, and which disputes the supposedly typical preference of chance-based games by women (Lopez-Gonzalez et al., 2020a; Wardle, 2017).

2.2.2 Age of sports bettors

As mentioned previously, being a young adult male has repeatedly been identified as a risk factor for problem gambling in general (Hing et al., 2016a; Johansson et al., 2009; Williams et al., 2012). This has also been found to be the case for both offline and online sports bettors who typically tend to be younger males (Gassman et al., 2017; Humphreys & Perez, 2012; LaBrie et al., 2007). The age of sports bettors also appears to vary by problem gambling severity status, with problem online sports bettors being on average 10 years younger than non-problem gambling sports bettors (Hing et al., 2017a). Young adults are more likely to be at risk

of problem gambling due to an incomprehension of statistical probability (Delfabbro et al., 2006) erroneous cognitions (i.e., illusions of control over outcomes). These factors can result in chasing losses, a common characteristic of problem gambling. In addition, adolescence' executive function is not completely developed, which increases risk-taking and impulsivity (Hollén et al., 2020). Hollén et al. (2020) highlight that this immaturity in self-regulation can increase impulsive sports betting, particularly in-play sports betting.

Some studies have indicated that being single is associated with higher problem gambling severity among sports bettors (Hing et al., 2016a; Russell et al., 2019a). Several features related to being single have been associated with problem gambling sports betting (Winters & Derevensky, 2019). Single individuals are more likely to have fewer financial responsibilities, a greater likelihood of watching and betting on sports with peers who also engage in sports betting, and it is more likely that they will visit social environments, such as friend's houses, bars and pubs, where betting with male peers is common (Gordon et al., 2015). However, as Delfabbro (2012) and Russell et al. (2019a) note, this observation is likely to be associated with the lower age of participants in higher risk groups, with young individuals generally having less opportunity to have experienced separation, divorce, or being widowed.

2.2.3 Socio-economic status of sports bettors

Research has shown that problem gambling in general is more common among individuals with lower socio-economic status (Welte et al., 2004, 2015). However, results relating to sports betting participation and socio-economic status have been conflicted. A prevalence survey by Welte et al. (2002) indicated that engagement with sports betting was lower for the lowest fifth of respondents by socio-economic status (as measured by family income, years of education and occupational prestige). Conversely, Humphreys and Soebbing (2012) reported that the likelihood of participating in sports betting increases when household income is low. An online survey in Germany (n=634) found that the typical sports bettor has a low household income (Gassman et al., 2017). Humphreys and Perez (2012) examined the characteristics of sports bettors in the United Kingdom, Spain and Canada and found that sports bettors tended to have a relatively high income in all three countries. Findings for the relationship between income and problem gambling amongst sports bettors have given contradictory results; Hing et al. (2017a) found an association between problem sports betting and lower income, whilst Hing et al. (2016a) and Russell et al. (2019b) reported no significant association between problem gambling and income.

Sports bettors typically have medium or higher levels of education, and are employed or a full-time student (Granero et al., 2020; Hing et al., 2015a; Hing et al., 2016a; Hing et al., 2017a), although, as Delfabbro (2012) highlights, these features are likely to be confounded with age. In addition, some studies have identified that having a higher level of education is associated with problem gambling in sports bettors (e.g., Hing et al., 2016a; Russell et al., 2019b). One possible explanation for this finding is that strategic games which involve a greater element of skill are more appealing to individuals with a higher level of education (Lopez-Gonzalez et al., 2020a). However, as Lopez-Gonzalez et al. (2020a) suggest, this could potentially backfire for those who consider their knowledge to be an important contributor to successful sports betting.

In terms of employment status, Hing et al. (2016a) reported that Australian sports bettors at risk of experiencing gambling problems were most likely working full- time or were a full-time student. This aligns with the general profile of internet gamblers who also tend to be working full-time or studying (Gainsbury et al., 2012). Sports bettors experiencing gambling problems tend to be earning above average salaries and employed in professional occupations (Hing et al., 2016a; Russell et al., 2019a). These positions provide them with more disposable income to gamble (Hing et al., 2016a). Similar characteristics have been found for those who engage in in-play betting, one of the newer sports betting features (Killick & Griffiths, 2019). Gainsbury et al. (2020) reported that in-play bettors were more likely to be of younger age, employed, more highly educated and from ethnically and culturally diverse backgrounds. Having a higher level of education has also been found to be positively associated with a higher likelihood of impulse in-play betting (Hing et al., 2018a). Hing et al. (2018a) suggest that this is perhaps because more highly educated individuals have a greater belief in themselves and their betting abilities when making rapid decisions.

2.2.4 Summary of demographics factors

In summary, results of previous studies suggest that the propensity to participate in sports betting depends on several demographic factors. The distinguishing demographic features of sports bettors have included the individuals' young age, un-married status (mostly single), male sex, medium or higher levels of education and being employed or a full-time student (Granero et al., 2020; Hing et al., 2015a; Hing et al., 2017a). These demographics also align with the common features of individuals who regularly engage in sports betting and who meet the criteria of being a problem gambler. It is important to consider gambling demographics in order to inform preventative interventions or policy measures that may help to limit harm from this

gambling form. This chapter has so far focused on participation rates of sports bettors and demographic characteristics. The next section will consider the specific structural and situational characteristics of online sports betting.

2.3 Structural characteristics associated with problematic sports betting

The structural characteristics of a gambling activity, that is, the way in which it is designed, impacts how gamblers perceive such activities and their ability to win with them (Parke & Griffiths, 2007). Some researchers have asserted that the development and increase of the structural characteristics of online sports betting have resulted in an increased risk for the development of gambling-related problems (Hing et al., 2015b, 2016a; Lopez-Gonzalez et al., 2019a; Newall et al., 2021a). While structural and situational characteristics were discussed in detail in Chapter 1, some of the factors which make sports betting potentially more attractive and/or more addictive are discussed here.

2.3.1 Event frequency

One of the structural characteristics that has been suggested to be associated with problem gambling is the event frequency (Griffiths & Auer, 2013; Harris & Griffiths, 2018). One of the structural characteristics of online sports betting includes shorter event durations and short intervals between bets, thus resulting in more rapid reinforcement (Auer & Griffiths, 2016; Lamont et al., 2016; Lopez-Gonzalez et al., 2017a; Newall et al., 2021a). There is an increased capacity to place a large number of bets on a single game or match (Hing et al., 2017c; Parke & Parke, 2019). This increased opportunity to bet continuously and rapidly in online sports betting has been suggested as a possible risk factor for problem gambling (Parke & Parke, 2019).

This argument is supported by a recent meta-analysis of 104 studies of gambling prevalence surveys on the general adult population by Allami et al. (2021). The authors reported that the most frequently assessed problem gambling risk factors with the highest effect sizes were associated with gambling activities that involved continuous play formats, which are characterised by a high rate of play and a short time between bet placement and the outcome (e.g., internet gambling or electronic gaming machines) (Allami et al., 2021).

2.3.2 Payout interval

Payout interval is the time between when a bet is placed and any winnings are paid out to the gambler (Parke & Griffiths, 2007). Shorter payout intervals may increase the potential for harm (Griffiths, 1994, 1999a). It has been argued that the frequency of gambling when combined with two other elements: (i) the outcome of the bet (win or loss) and (ii) the time taken to receive the winnings, exploits the psychological principles of learning (Griffiths & Auer, 2013). It has been argued that the length of the payout interval offers little time for reflection and allows the winnings to be immediately replayed (Griffiths, 1994, 1999a).

Shorter payout intervals increase the likelihood of experiencing gambling-related problems, as escalated betting speed increases the amount of money that can be lost in any given gambling session. It has also been argued that reduced payout intervals may promote impulse wagering, and be especially appealing to individuals with gambling problems who often have elevated higher levels of trait impulsivity (Amlung et al., 2017). The rapid payout interval for in-play betting wagers and outcomes may also attract impulsive gamblers to this form of sports betting (Gray et al., 2012).

In in-play sports betting, bets can be placed on in-match contingencies, where the outcome is revealed before the end of the match, thus increasing the payout interval (Newall et al., 2021a). Micro-betting, that is, when bookies offer odds for an outcome that can be determined almost immediately, for example whether the next serve in tennis will be a foul (Russell et al., 2019c), can increase the potential pay out frequency even more.

'Cashing out' a sports bet, that is, settling a bet for a proportion of the potential winnings prior to the event ending, can also increase the payout frequency. The cash out feature is positively associated with problem gambling (Lopez-Gonzalez et al., 2019a) and this may be due to the shortened payout intervals, which gives bettors the option to place further bets on an event (Newall et al., 2021a).

2.3.3 In-play sports betting

In-play sports betting has changed the structural characteristics of sports betting. Sports bettors now have the facility to bet more frequently during a single sports match, rather than placing just one bet on the overall outcome of the game (i.e., who will win). The placing of an in-play sports bet, in comparison to placing a bet before the match has started, is that the nature of the gambling activity has changed from what was previously a discontinuous form of gambling into a continuous one (Griffiths 2012; Griffiths & Auer 2013) and this transformation has been

identified as a component that is likely to increase problematic sports betting behaviour (Parke & Parke, 2019).

Further support of the significance of structural factors determining excessive betting comes from research that analysed 47,603 *bwin* betting website subscribers (LaPlante et al., 2008). The authors found that the most involved bettors, who were the most active 1% of the user base, who bet on the final outcome of the match did not increase their sports betting behaviour over time, whereas those who placed bets in-play did. In a subsequent study, LaPlante et al. (2014) expanded the sample to additional forms of gambling and compared the role of depth (i.e., more frequent betting) and breadth involvement (i.e., multiple different gambling forms). Once depth and breadth had been controlled for, only in-play betting predicted gambling-related problems. These findings suggest that the structural characteristics of a game, the in-play betting, in combination with other determinants, could be a precipitant of gambling disorders (Hing et al., 2015b; Lopez-Gonzalez et al. 2017a, Lopez-Gonzalez et al., 2019a; Newall et al., 2021a).

2.3.3 Near misses

Near misses, that is failures that are close to being successful (Parke & Griffiths, 2007), are believed to encourage continued gambling. Near misses can naturally materialise in sports, for example, one sports team might appear to be winning but the other team turns the game around to win (Newall et al., 2021a). Near miss has the potential to increase betting frequency, as the bettor may want to place additional bets in order to recover money that they have lost (Wu et al., 2015). Some types of gambling, such as slot machines, are fixed to guarantee a higher than chance occurrence of near misses (McCormack, 2011).

Near misses have been shown to influence gambler arousal due to frustration. For instance, research conducted with slot machine gamblers has reported that near misses elicit strong skin conductance responses. These responses are stronger than those for small wins, demonstrating that a stronger amount of physiological arousal is related to these results (Dixon et al., 2011). In addition, a functional magnetic resonance imaging (fMRI) study of near misses found that the mesolimbic reward system was activated by these near misses, and that near misses also increased individuals' desire to continue gambling (Clark et al. 2009). Moreover, using slot-machine type games, Clark et al. (2009) demonstrated that gambling urge, that is how great an

individual's desire is to continue gambling, was greater following near misses than regular losses.

In sports betting, these near misses tend to occur more by chance and they can be common for accumulators, custom sports betting, and complex bets (Newall et al., 2021a). For example, an accumulator bet needs all selections within the bet to be winners, which could therefore naturally lead to a high proportion of near misses to wins (Newall et al., 2021a). 'Cash out' can also lead to an increase in the perceived rate of near misses because they can create circumstances where even a losing bet may result in the opportunity for the bettor to make a profit (Newall et al., 2021a). Newall et al. (2021a) argues that the opportunity for newer online sports betting features to heighten motivations for gambling due to the frequency of near misses is an important area for future research.

2.3.4 Greater illusion of control

New sports betting products, such as cash out and custom sports bets, are providing bettors with a greater level of control over their wagers (Newall et al., 2021a). Sports betting differs from other types of gambling activity such as bingo, lottery, and roulette in that it is designed with elements of both skill and chance, similar to blackjack and poker. This combination of skills and chance may cause some individuals to underestimate how significant the role of chance is, while overestimating the role that their own sports knowledge plays in winning (Lopez-Gonzalez et al., 2018a). Research conducted with expert hockey bettors (n=30) found that the so-called "skills" of the sports bettors were cognitive distortions (Cantinotti et al., 2004). More specifically, perceptions of expertise were reinforced by near misses and interpretive biases (Cantinotti et al., 2004). Erroneous cognitions can result in an 'illusion of control', the tendency for an individual to over-estimate their ability to control events and these beliefs can lead to over-confidence and over-estimations of skill in gamblers (Lambos & Delfabbro, 2007). Those experiencing gambling problems tend to overestimate the extent to which their choices control fundamentally random events (Goodie & Fortune, 2013).

In-play betting, which involves a closer relationship between watching sports and betting; micro betting (i.e., betting on outcomes which are determined almost immediately such as the next point in a tennis match); and in-play betting functionalities such as 'cash out' (where an individual may have the opportunity to settle a bet before the event has ended) are associated with a greater illusion of control over bets (Newall et al., 2021a). These new betting products, such as 'cash out' or sports betting promotions, such as 'request-a bet' products which allow

customers to request customised betting odds, give bettors more perceived control over their bets (Newall et al., 2021a). This perceived control is associated with the belief that an individual's personal control can assist them in beating the betting odds. Newall et al. (2021a) argued that there is some truth to this confidence in sports bettors, however, this belief is regularly held more than is truly justified.

2.4 Situational characteristics associated with problematic sports betting

Online gambling is changing the nature of situational determinants to gamble and could influence the uptake of gambling services. The main changes that have been caused by the introduction of online gambling is the increased accessibility and convenience of online gambling forms, as they can be accessed in multiple environments such as at home and in the workplace (Griffiths & Barnes, 2008).

Lopez-Gonzalez et al. (2017b) suggested several new situational factors in online sports betting, which include: (i) anonymity (in terms of players being able to privately engage in gambling without the fear of stigma traditionally attached to gambling); (ii) more social facilitation within online betting communities; (iii) the comfort of being able to bet at home or elsewhere using a mobile device; (iv) a vast number of options of global sports betting competitions to bet on and the continuous availability of markets to bet on around the clock; and (v) a heightened intrinsic relationship between sporting values with sports betting, for example, loyalty, team identification and competition, further enhanced by the increase of live sports content on social media and television.

2.4.1 Accessibility, convenience, and anonymity

Online sports betting has made way for fast, easy, and constant access to gambling, as well as the opportunity to bet undisrupted in private settings (Granero et al., 2020). It is now easily available from comfortable environments such as home, the workplace, and many other settings, and this comfort may result in reduced feelings of risk (Griffiths et al., 2016).

The characteristics of betting via a mobile device could make it potentially more addictive than other gambling activities (Granero et al., 2020), or betting at physical gambling locations. One reason is because online betting websites are easily accessible from anywhere where there is an internet connection, 24 hours a day, seven days a week. In the UK, mobile phones are now the most common method of accessing online gambling, with 50% of all online gamblers using this mode in 2019 (Gambling Commission, 2020). It has been argued that the absence of

environmental distraction when betting online in comparison to a land-based establishment may result in an increased immersion in the sports betting activity, which could theoretically result in increased dissociation levels, and therefore, less control over cognitions during gambling (Hing et al., 2017a, 2017c).

The ability to gamble for uninterrupted periods in seclusion may contribute to the progression of gambling-related problems. The private and asocial nature of online sports betting may increase the risk that the individual does not recognise the development of problematic sports betting behaviour until the problematic behaviour has significantly escalated, in comparison to wagering in a land-based venue such as a high street bookmaker (Estévez et al., 2017; Gainsbury et al., 2013).

2.4.2 Social facilitation

One environmental feature that may make sports bettors feel more psychologically and physically comfortable is social facilitation, that is, the presence or absence of other people in the vicinity (Griffiths, 1995). Online sports betting often occurs in social settings in the company of peers in pubs, at a friends' house, or other social settings (Gordon et al., 2015). Betting using a mobile device gives individuals the option to bet whilst in these social settings.

Sociological perspectives attribute social structures present within a gambling environment as partly responsible for the development and maintenance of problem gambling (Raylu & Oei, 2002). Peer influence is a factor that has been found to be positively associated with sports betting behaviour (Ayandele et al., 2020; Deans et al., 2017b; Lamont et al., 2016, 2020; Thomas et al., 2012) and peers affect vulnerability, through normative and social influence (Deans et al., 2017a; Hunt & Gonsalkorale, 2018; Thomas et al., 2012). Research on male gender roles has identified the behaviours that are effective at establishing masculinity and they are those perceived as being risky (Deans et al., 2017a) and skill-based (Gordon et al., 2015; Cassidy, 2014), both of which are characteristics of strategic forms of gambling (Hunt & Gonsalkoral, 2018). In a study by Hunt and Gonsalkoral (2018), sports bettors reported that being seen as intelligent and skilled were significant motivators for both casino table games and sports betting. It was also noted that those who engaged in these two gambling activities displayed greater levels of conformity to masculine norms in comparison to those who preferred gambling on gaming machines (Hunt & Gonsalkorale, 2018). However, the desire to demonstrate betting knowledge and skills to peers has been found to motivate risky

consumption practices that may lead to problematic sports betting behaviours (Gordon et al., 2015). Therefore, easier and fast accessibility to betting opportunities, combined with social facilitation, may lead to an increased risk of experiencing gambling-related problems.

2.4.3 Sports betting and alcohol

Due to the availability of smartphones, it is possible to bet on numerous sports, at any location, and at any time (Waitt et al., 2020). As mentioned above, sports betting often occurs in a pub, at sporting stadiums, or at friend's houses (Gordon et al., 2015) in situations where alcohol is consumed. Greater levels of alcohol and drug consumption have been found to be positively associated with problem gambling in several studies (LaBrie et al., 2003; Skaal et al., 2016; Welte et al., 2004) and some research has confirmed a positive association between alcohol consumption and the probability of being categorised as a problem or moderate-risk sports bettor (Nabifo et al., 2021; Russell et al., 2019a). Although the prevalence of alcohol use disorder amongst sports bettors is not clear, researchers have found that alcohol is frequently consumed while simultaneously betting on sports (Gordon et al., 2015; Jenkinson et al., 2018; Raymen & Smith, 2017). Two studies from the United States found that the quantity and frequency of alcohol consumption predicts sports betting involvement (Blankenship et al., 2007; Jonkman et al., 2013). However, the studies did not investigate how alcohol consumption when betting influenced ensuing betting practices.

There is evidence to suggest that simultaneously betting and consuming alcohol can impact betting behaviour. For example, Jenkinson et al. (2018) reported that 55% of occasional bettors place wagers when affected by alcohol in comparison to 73% of weekly sports bettors. Furthermore, half of those regular bettors who bet when affected by alcohol reported that they placed more bets and spent more money than they would have otherwise (Jenkinson et al., 2018). Qualitative research with sports bettors has indicated that consuming alcohol results in an increased likelihood of placing sports bets on impulse (Lamont et al., 2016). Therefore, the gambling environment, including alcohol consumption, may contribute to the development and maintenance of problem gambling (Clarke et al., 2006).

2.4.4 Sports betting advertising

The use of gambling marketing and advertising can stimulate individuals to gamble (Binde, 2019). In recent years, there has been a significant increase in advertising for online sports betting (Lopez-Gonzalez et al., 2017a). Sports betting advertisements emphasise the value for

money and ease of accessing online sports betting (Hing et al., 2015c; Sproston et al., 2015). Online sports betting has been marketed in such a way that sports betting has become normalised, and perceived as a typical everyday activity, particularly for young adults (Binde, 2014; Deans et al. 2016a; Gordon et al. 2015). The impact and implications of sports betting advertising are discussed in detail in Chapter 3.

2.5 Summary of structural and situational characteristics

A number of risk factors for the development of problem sports betting have been examined in relation to the structural and situational characteristics of this activity. These include: increased accessibility and availability of sports betting; continuous forms of sports betting; and the proliferation of marketing and advertising of this gambling form. Changes in the gambling environment, including the ease of access via mobile devices, and the proliferation of online sports betting marketing, has resulted in individuals experiencing increased external cues to either commence, or continue with, online sports betting, and these factors can make it challenging for individuals to control their sports betting involvement (Parke & Parke, 2019). Changes in sports betting technologies have introduced higher event frequency betting, which produces faster reward mechanisms and feedback which are more likely to lead to problem gambling behaviour (Griffiths & Auer 2013; Harris & Griffiths, 2018). However, as Lopez-Gonzalez et al. (2017b) argues, neither the structural or situational characteristics act as singular factors for determining online betting behaviour. More likely, these factors, in addition to individual factors such as the psychological, biological or social features of the bettor, work in aggregation to facilitate gambling behaviour.

2.6 Benefits of sports betting

While there has been extensive research conducted on the adverse social and mental health consequences of sports betting, little research, however, has reported the advantages. While much of the literature on gambling, including betting on sports, appears to be centred on the pathological aspects of such activities, there is a growing segment of research that has frequently reported motivations for gambling that include for fun, excitement, to win money, self-esteem enhancement, and for social reasons such as meeting new people or interacting with friends (Fang & Mowen, 2009; Wickwire et al., 2007).

Individuals invest money gambling not only for financial motives, but also to gain intangible benefits, like excitement, entertainment and enjoyment (Francis et al., 2015; Lamont & Hing,

2020). Gambling can satisfy multiple needs, but one of the most sought after is pleasure (Johansson et al., 2009). A recent qualitative study of young men's sports betting motivations by Lamont and Hing (2020) identified that sports betting was powered by individualized, interrelated motives, which were centred around satisfying innate psychological needs of competence and relatedness. In the case of competence, individuals often view sports betting as involving skill, and if successful, could result in feelings of superiority and a sense of satisfaction from selecting the correct outcome. Although much of the belief that sporting expertise is an important driver of betting skills appears to be cognitive distortion (Khazaal et al., 2012), Cantinotti et al. (2004) argue that the utility of sport expertise in sport betting cannot be fully ruled out. In regard to relatedness, there is a perceived social value of sports betting (Lamont & Hing, 2020; Tagoe et al., 2018). Sports betting often occurs in social settings with peers, at a pub, friends' houses or at sports betting venues. Sports betting is an interest that is shared between friends, a conversation starter, and a reason for group leisure interactions (Lamont & Hing, 2020).

Sports betting can also produce feelings of arousal or excitement, that arise from a combination of sources including the act of risk taking, or feelings of suspense when waiting for the betting outcome (Lamont & Hing, 2020). Additionally, sports betting can intensify involvement in certain sporting matches and having a financial stake in a match can generate enhanced engagement and induce excitement (Lamont & Hing, 2020).

There are several beneficiaries of sports betting that are not just the individual gambler. These beneficiaries include sports fans, teams, organisations, sponsors, and society in general (Fullerton et al., 2019). Sports betting advertising is embedded within sports matches (Thomas et al., 2012; Purves et al., 2020) and in the case of football leagues, such as the English Premier League (EPL), the gambling industry provides football clubs with an opportunity to generate sponsorship income. For example, Bunn et al. (2019) reported that in the 2016/2017 EPL season, 10 out of 20 (50%) of the league membership teams displayed gambling sponsorship on their shirts. These football clubs benefit financially from this sponsorship and these annual sponsorships often get channelled towards improving infrastructure, training facilities, establishing academies and supporting local community initiatives (Fullerton et al., 2019).

2.7 Summary and conclusion

The expansion of sports betting in developed countries into online platforms has created greater opportunities to partake in this gambling activity. Several internal and environmental risk

factors associated with problem sports betting have been recognised, including but not limited to age, gender, socio-economic status, erroneous cognitions, biological/genetic vulnerabilities, peer group interactions, and the structural and situational characteristics (Blaszczynski & Nower, 2007; Newall et al., 2021a; Toneatto & Nguyen, 2007, Winters & Derevensky, 2019). Biological, psychological, social and environmental factors all interact to explain sports betting behaviour. Therefore, it appears that using a multi-dimensional framework will lead to a better understanding of sports betting.

Understanding the risk factors for problem gambling amongst sports bettors is an increasingly important area of research due to the large expansion of sports betting in numerous countries (Killick & Griffiths, 2019), ubiquitous marketing and its successful targeting of young adult males. New innovations for fixed-odds sports betting products, such as in-play betting and the "cash out" feature have changed the structural characteristics of this activity. This has resulted in concerns related to the extent that these new structural characteristics contribute to bettors spending a disproportionate amount of money and time when gambling. Although, due to the relatively limited research conducted on online sports betting, the supporting evidence for these links remains partial (Newall et al., 2021a) and further research is required to understand the contributions of these new features of the online sports betting environment.

Online sports betting could potentially be associated with a higher risk of problem gambling compared to more traditional, land-based gambling (Estévez et al., 2017; Lopez-Gonzalez et al., 2019a). However, this is not a consistent finding (Russell et al., 2019a), and other data indicate that online gamblers may be less likely to be characterised as problem gamblers (Blaszczynski et al., 2016). It is therefore important to further examine the relationship between the mode of sports betting and problem gambling. This will ensure that health care professionals are aware of these advances so that they can respond appropriately to a potential rise in the number of individuals experiencing gambling problems.

As sports betting is becoming formally legalised in more countries, and the number of sports betting markets and products are introduced, examining which individuals are most at risk from this type of gambling is essential. This knowledge will help with the development of suitable, preventative, early interventions, inform regulations, and harm-reduction and treatment strategies (Hing et al., 2014a, 2016a). In addition, the findings of the literature review highlight the need for preventative measures. As Hing et al. (2016) suggest, these measures should be targeted at young adult males and integrated into school educational programmes and young

media, to circumvent an appreciation in gambling problems between young men when they reach the legal age for sports betting.

Russell et al. (2019c) suggest that motivations and erroneous cognitions may alter over time, and can therefore be approached through treatment, for example exposure therapy and cognitive-behavioural therapy (CBT) that aims to address erroneous beliefs and cognitive distortions. Higher impulsiveness has been linked to problem gambling in sports bettors (Russell et al., 2019c). As a result, appropriate restrictions or protection should be considered for betting features (e.g., in-play betting and "cash out") and betting promotions (e.g., wagering inducements) that stimulate impulsive responses (Russell et al., 2019c). Harm-minimisation tools that have been found to be effective for reducing gambling-related harms from EGMs (see Harris & Griffiths [2018] for a review) could be considered for sports betting products. Consideration will now be given to the impact of sports betting advertising.

Chapter 3: Sports betting advertising: A review of the literature

3.1 Background of sports betting advertising

In Europe, sports betting has been progressively developed and legalised since the mid-2000s, which has resulted in a normalisation of gambling practices (Guillou-Landreat et al., 2021). As a result, the number of online betting platforms that are legally available has risen. This has created competition between operators to position themselves and bring customers to this relatively new market (European Commission, 2012). Subsequently, sports betting is marketed in complex and varied ways (Hing et al., 2014b).

Gambling advertising law in the UK is complex and multi-faceted (Hörnle & Carran, 2018), as it relies on a combination of statutory framework legislation (the Gambling Act 2005 and the Communications Act 2003) and co-regulatory Codes of Practice (the CAP/BCAP Codes; (ASA, 2010), 'The Advertising Codes', and the Gambling Industry Code for Socially Responsible Advertising (IGRG, 2017) (Hörnle & Carran, 2018).

It is widely accepted that advertising and media exposure have a significant influence on individuals' attitudes and behaviours (Anderson et al., 2009; De Pelsmacker et al., 2002). The impact of advertising on the development of gambling problems is largely unknown, and this is the case across various forms of gambling advertisements and gambling types (Labrador et al., 2021). It is possible that exposure to gambling advertising could make some individuals gamble more often and develop an addiction. However, the effects of gambling advertising are not as well understood in comparison to other areas of addiction, such as alcohol use and smoking (Bouguettaya et al. 2020).

The work presented in this chapter is a narrative review as the literature cited below was not selected in a strictly systematic manner but rather on the basis of three main aims: (i) to map the current state of knowledge of the risks associated with sports betting advertising, (ii) to provide the readership with a broad overview of this topic, and (iii) to provide a starting point for future research, in particular the qualitative interview study (Chapter 6). The method used replicated the strategy used in a recent narrative review by Hayer and Kalke (2021). Relevant studies were identified through the searching of three electronic databases: PsychINFO, PubMed and Scopus. Search words included: 'online gambling', 'internet gambling', 'remote gambling', 'interactive gambling', 'sports bet*', 'football bet*', 'in-play', 'sponsorship', 'advertis*', 'marketing' and 'promotion'. In addition, reference lists of relevant sources were examined.

3.2 The delivery, placement, and frequency of sports betting advertisements

Marketing for sports betting products is no longer limited to environments that are designed exclusively for gambling (e.g., gambling venues, bookmaker websites or mobile applications). Instead, the marketing of sports betting products has entered everyday community and media spaces (Deans et al., 2017b). There are multiple media formats in which sports betting is advertised, including via television, newspapers, magazines, radio, on the internet, and via direct messages, such as text messages and emails. Researchers have also demonstrated how sports betting companies embed advertising within sporting events, making it difficult to ignore (Milner et al., 2013; Purves et al., 2020; Thomas et al., 2012). This includes banners around sports stadiums, in-game commentary, shirt sponsorship, and live-odds either announced or displayed on billboards (Thomas et al., 2012).

In the UK, some of the increase in gambling advertising has been attributed to the Gambling Act 2005, which was introduced in 2007, and allowed television advertising for sports betting, online casinos, and online poker (Gambling Act, 2005). Advertising and marketing spend for sports betting products has dramatically increased in recent years (Lopez-Gonzalez et al., 2017b). An Ipsos MORI report, published in March 2020 by the *GambleAware* charity, highlighted that 'paid for' gambling advertisements in the UK had increased across all media channels from £264.66m in 2015 to £328.95m in 2018 (a 24% increase) (Ipsos MORI, 2020).

In many countries, there has been an increase in the availability of online gambling (Gainsbury, 2015a), and this has been accompanied by an increase in the frequency of online sports betting advertisements, particularly television advertisements, sponsorship (Lamont et al., 2011; Nielson, 2021), and marketing content distributed via social media platforms (Torrance et al., 2021). Research has indicated that 17% of all the television advertisements broadcast around ITV's coverage of the 2018 football World Cup were for gambling (Duncan et al., 2018). Furthermore, in the UK, the amount spent on sport sponsorship has doubled from £30m to £60m (Lopez-Gonzalez & Griffiths, 2018b), while spend on social media marketing has more than tripled in recent years (GambleAware, 2018).

3.3 The content of sports betting advertising

The frequency, availability and content of gambling advertising marketing may influence gambling behaviours and the likelihood of experiencing gambling-related problems (Håkansson & Widinghoff, 2019). Researchers of sports betting advertisements, particularly in

the past ten years, have begun to assess the frequency of different messages, advertising channels, target audience, and the specific themes or narratives depicted within the advertisements. Although studying the content of sports betting advertisements does not (and cannot) assess the direct effect of advertising on individuals, it can offer insights into where potential effects might occur (Binde, 2014).

3.3.1 Content that positively frames sports betting

Gambling marketing is similar to other forms of advertising in that it highlights the positive aspects of the product and touches very little on any potentially negative elements (Binde, 2014). Gambling is often depicted as an activity with overwhelming positive qualities, including excitement, fun, success, and economic affluence (Binde, 2014). Portraying advertising as an activity with positive qualities may contribute to society having a positive attitude towards gambling (Binde, 2014), whilst contributing to the 'normalisation' of gambling. Sports betting advertisements have been found to employ risk reducing strategies that include utilising themes such as humour, excitement, friendships, celebrities, and winning (Deans et al., 2016b; Gainsbury et al., 2016a; Lopez-Gonzalez et al., 2017a; Parke et al., 2014).

Sports betting is often framed as an activity undertaken among male friends (Deans et al., 2016a; Gordon et al., 2015; Lindsay et al., 2013; Lopez-Gonzalez et al., 2018b, 2018c; Sproston et al., 2015). Analysis of the content of gambling advertisements has demonstrated that wagering providers employ narratives such as mate-ship and comradery to encourage individuals to bet on sports (Deans et al., 2016b; Thomas et al., 2015). Sports betting advertisements have also been found to display characters drinking alcohol in order to highlight the message of social bonding that is associated with the enjoyment of sports (Lopez-Gonzalez et al., 2018d). Displaying the act of friendship creates a setting that involves familiar feelings of security and comfort and as a consequence, behaviour is reinforced through imitation (Deans et al., 2016b).

Another common narrative used in sports betting advertisements is humour. Humour has previously been proposed as a normalising strategy for gambling (Monaghan et al., 2008; Sklar & Derevensky, 2011). In an examination of British and Spanish sports betting television advertisements, Lopez-Gonzalez et al. (2017c) demonstrated that over half of the advertisements contained elements of humour. Similarly, sports betting Twitter pages have also been found to incorporate humour in their posts (Houghton et al., 2019; Killick & Griffiths,

2020a) in order to minimise the perceived risk involved with betting. Lopez-Gonzalez et al. (2017c) suggested that when narratives of humour are combined with friendship, it creates an overarching narrative of security to promote risk-free betting. Furthermore, the sports betting industry have been found to employ symbolic marketing strategies to encourage a social acceptance of sports betting, in the same way that is used in the promotion of other risky products, such as tobacco or alcohol (Deans et al., 2016b).

3.3.2 Skill-enhancing narratives

Sports betting advertisements contain narratives that reduce feelings of risk and encourage feelings of control over betting results (Deans et al., 2017a; Lopez-Gonzalez et al., 2018a). Lopez-Gonzalez et al. (2018a) outlined two of the most commonly employed narratives in online sports betting advertisements: (i) risk-lowering narratives – which tend to overestimate the likelihood of winning and underemphasise the risk involved in betting, and (ii) skill-enhancing narratives – where there is an overemphasis of the knowledge and capacities of the bettor. Examples of themes used in sports betting advertisements to promote risk lowering strategies included the use of humour, fun, friendship, free money and celebrities. This strategy emphasises particular attributes of sports betting that serve to reduce the perceived risk of betting. Whilst themes including experience, masculinity, and analysis and knowledge emphasises aspects of sports betting that lower the perceived risk of betting (Lopez-Gonzalez et al., 2018a). This advertising portrayal implies that betting is an activity that is harmless, and that winning skills can be acquired through practice, knowledge and talent (Lopez-Gonzalez et al., 2018a; Milner et al., 2013).

3.3.3 Promoting complex betting odds

Some research has drawn attention to the marketing of specific odds or betting-related information and content by providers (Torrance et al., 2021). UK bookmakers motivate customers to wager on bets that have larger implied profit margins for the bookmaker, highlighting complex bets with several potential outcomes and high potential winnings (Newall, 2015). British and Spanish wagering advertisements have been found to depict bettors staking small amounts of money with large potential winnings, implying high risk bets (Lopez-Gonzalez et al., 2018c). UK television football advertisements promotion of live odds during the 2018 football World Cup matches were skewed toward complex events (i.e., long-odds sports bets with a higher number of a combination of relevant possible outcomes that could

happen in a specific class of events) and were more challenging to predict (Newall et al., 2019a). These bet types have been commonly observed in studies of UK sports betting advertising on television (Newall, 2015, 2017). Sports betting operators also use tactics to make betting appear more "urgent" than necessary. One example is displaying improved or 'boosted' odds, restricted by the time frame in which they can be claimed (Newall et al., 2019a). The authors argue that advertising complex betting odds and time-limited odds is theoretically designed to nudge sports bettors in the direction of high-risk and more impulsive bets with larger potential payouts (Newall, 2017; Newall et al., 2019a, 2019b).

3.3.4 Sports content on social media

Much of the literature exploring sports betting advertising has focused on television advertisements (e.g., Deans et al., 2016b; Lopez-Gonzalez et al., 2018c; Newall, 2017) and in embedded stadium advertising (Milner et al., 2013; Purves et al., 2020; Thomas et al., 2012). In more recent years, attention has begun to shift towards advertising on social media platforms (e.g., Houghton et al., 2020; Gainsbury et al., 2015b, 2016a; Thomas et al., 2015, 2018).

Sports betting operators use covert marketing techniques on social media, whereby news and updates on sporting events are often posted without specifically mentioning or suggesting betting, but rather to encourage individuals to follow the operator in order to receive sporting-related information (Gainsbury et al., 2016a). For example, Australian sports betting operators were found to post tweets of an informing, reporting and/or promoting nature, providing sports content to inform users on the sports and events which they are betting on (Stadder & Naraine, 2020). Another strategy used by gambling operators is to use betting facts and stories that make consumers feel like betting experts or that they have insider knowledge (Smith et al., 2019). Gambling operators use information transfer on social media as an indirect way to retain their existing customer base and attract new customers (Gainsbury et al., 2016a). Additionally, gambling companies utilise hashtags in order to join their tweets to conversations around sports events and to engage with more users (Killick & Griffiths, 2020a; Stadder & Naraine, 2020; Thomas et al., 2015). Gainsbury et al. (2016a) argued that posting sports, as well as unrelated content, enables sports betting to be normalised within a broader social context.

3.3.5 Financially incentivising content

Many sports betting advertisements include inducements or incentives to gamble (Hing et al., 2015c) and past studies have recognized that inducements for sports betting can increase one's wagering and lead to more harm (e.g., Hing et al., 2014c, 2018). These inducements offer an additional, motivation to bet, in addition to the actual sports betting products. Research has shown that just under half (47%) of Australian betting advertisements refer to money back or free money (Hing et al., 2017c). These promotional strategies aim to incite immediate betting by persuading the customer that the benefits of placing a sports wagers are greater than any risks (Lole et al., 2020). They are also designed to recruit and register new customers, and retain existing online gambling customers (Weibe, 2008) and encourage brand switching (Hing et al., 2018).

Sports betting inducements may be promotions that provide limited time price cuts, savings, refunds, or free bets. Hing et al. (2017d) reported that the most frequently occurring Australian sports betting inducements include bonus bets, cash back, better odds, and reduced-risk offers. Bonus bets offer bettors the chance to bet on a future events sporting events for 'free', however they often come with terms and conditions that state that additional betting is required (wagering requirements) before the bonus bet can be released (Hing et al., 2018). Cash back inducements - provide a percentage cash back on betting expenditure and these may be offered for a specific event (e.g., horse racing) and/or bet types, with differing cash back being paid for different bet types. Better odds – present both temporary offers and continuous promotions, which often imply that the bettor will receive the highest possible return of the bet amount. Reduced risk promotions refer to the receiving of a refund (or partial refund) of the stake placed if the bet is unsuccessful. (Hing et al., 2018; Lole et al., 2020).

One study that assessed the relative appeal of several message elements in sports betting advertisements reported that the type of bet (the risk-free bet) stimulated greater betting intentions among all problem gambling severity groups, compared with the type of message format, the type of appeal, and the type of presenter (Hing et al., 2017b). The risk-free bet is where operators credit a refund if the bet loses but additional conditions are met, for example, if your team loses but a certain player scores a goal (Hing et al., 2017b). Risk-free betting may promote the idea that betting is a risk-free activity that does not require self-regulation (Hing et al., 2017d, Lopez-Gonzalez et al., 2018a) and in some cases the refund is credited as a bonus bet, which requires further betting in order to take advantage of the inducement (Hing et al., 2017b).

Inducements are designed to influence bettors to think that they are choosing a 'safer' bet, and they have a higher likelihood of winning (Hing et al., 2017d, 2019). Often, sports betting inducements can only be used in a manner that encourages additional betting (Hing et al., 2015c). Furthermore, they are often accompanied by numerous terms and conditions, which many sports bettors misunderstand (Hing et al., 2017d). Consequently, although incentives are portrayed as a financially beneficial way to bet, research suggests that the use of betting promotions is actually related to more harmful betting practices; more specifically, they may result in the placement of riskier bets, impulsive betting, intensified use of the wagering product, and chasing losses (Hing et al., 2014c, 2015d, 2017d, 2018; Lopez-Gonzalez et al., 2018e).

3.3.6 Customised sports betting products

Many contemporary wagering products involve an element of customisation (Lopez-Gonzalez et al., 2019b; Newall et al., 2021a, 2021b). These products have been studied frequently in recent years due to their extensive marketing by gambling brands on social media (Bradley & James, 2019; Houghton et al., 2019; Killick & Griffiths, 2020a). One such example is 'custom sports bets' (CSB), which provide bettors the opportunity to customise their betting slip, to varying degrees, depending on the product (Newall et al., 2021b). For example, 'request-a-bet' allows bettors to contact bookmakers, usually via Twitter, and solicit odds for a specific bet that they have requested (Newall et al., 2019c).

Newall et al. (2021b) conducted a survey study with 789 UK sports bettors and found that individuals in the study who had used a CSB products were more likely to be problem gamblers, than those who had not. The authors suggested that having the option to customise bets may make problem gamblers over engage with CSBs due to an illusory perception of control that they provide (Newall et al., 2021b). This argument aligns with the marketing of these products, which typically highlights the enhanced control that bettors can apply when wagering on them, while minimizing the role of chance, as well as the in-built house edge that these products are designed with (Lopez-Gonzalez et al., 2019b).

3.3.7 Responsible gambling and harm reduction content

Researchers have previously argued that the positive portrayal of gambling is not necessarily harmful, providing that those gambling also receive adequate and accurate information on gambling-related risks (Planzer & Wardle, 2012). Following both media and political pressure,

the UK gambling industry introduced several 'responsible gambling' campaigns, including 'when the fun stops, stop', 'bet regret', and 'bad betty' (Sharman et al., 2019). These messages are often merged into or presented together with the promotion of gambling brands, offers, and products across a range of medias (Parke et al., 2015). The content of these messages typically includes terms and conditions, age restriction information, information for gambling support services, and warning of the negative consequences of gambling (Critchlow et al., 2020). These prevention campaigns aim to reduce gambling and encourage help-seeking (Guillou-Landreat et al., 2021).

In a recent study of internet, television, radio and printed gambling advertisements in the UK, across a range of gambling products (e.g., sports betting and lotteries), and a variety of advertisement formats, it was reported that one in ten advertisements did not contain terms and conditions, whilst one in seven did not include harm reduction or age restriction messages (Critchlow et al., 2020). In addition, most of the harm-reduction messages did not explicitly mention gambling-related harm (Critchlow et al., 2020). Research by Columb et al. (2020) assessed the content of television, dynamic, and static advertisements displayed during live sporting events in Ireland. The authors found that most of the advertisements included a responsible gambling message, age limit, and responsible gambling organisation's information. However, they note that no responsible gambling tools were observed, such as information about deposit, spending, and session limits.

There are different elements of responsible gambling messages that impact their effectiveness including the way the message is framed, the type of content used, the social norms deployed, the level of specificity and applicability in real-world settings, whether it engages consumers in self-referential processing, and whether messages are personalised to target specific population subgroups (Gainsbury et al., 2018). However, other research on the effect of these messages have found little to no effect on gambling behaviour (Lole et al., 2019; Newall et al., 2019d) with empirical research demonstrating that sports bettors tend to pay more attention to wagering information, rather than responsible gambling messages (Lole et al., 2019).

3.4 Sports betting advertising target audience

It is important to understand the impact of differing types of marketing on various population subgroups in order for policy regulators, researchers, and educators to respond appropriately (Binde, 2014). It is undetermined whether sports betting advertising has a specific effect on certain groups (e.g., students, men, young people). Studies have indicated that sports betting

advertising is typically targeted at young men (e.g., Deans et al., 2016a; Milner et al., 2013; Sproston et al., 2015). However, there have also been concerns raised that sports betting marketing may appeal to children and adolescents (Djohari et al., 2019; Thomas et al., 2016). For example, some sports betting advertisements have been found to incorporate humour, celebrity endorsements, memes, and animations (Pitt et al., 2018; Thomas et al., 2015).

3.4.1 Sports betting advertising targeted at men

The gambling literature suggests that the target market for sports betting operators is young men, with a variety of marketing techniques being employed to reach and target this key audience segment (Deans et al., 2016b). According to Hing et al. (2016a), the target audience of betting advertisements aligns with the prototype sports bettor which is male, young, tech-savvy, and professional.

There tends to be a male-orientated focus in the narratives that are presented (Deans et al., 2016b; Lopez-Gonzalez et al., 2018a, 2018c). For example, Deans et al. (2016b) demonstrated that Australian operators positively frame sports betting using masculine themes including peer bonding, sports fan rituals, and power and control. In addition, sports betting marketing often includes attractive women and sexualized imagery, clearly targeting the young male profile that is typical of sports bettors (Milner et al., 2013; Sproston et al., 2015).

Other countries, such as Spain and the UK, have also been observed to present televised football betting advertisements that were male dominated and merged displays of sports betting, alcohol consumption, peer bonding, and emotionally charged situations for example, celebrating a team winning (Lopez-Gonzalez et al., 2018a, 2018c). Lopez-Gonzalez et al. (2018a) demonstrated that sports betting advertisements highlighted the advantageous effects of sports knowledge within a masculine context to enhance the perceived control of bettors. Qualitative research has indicated that men feel targeted and encouraged by these sports betting advertisements (Thomas et al., 2012; Deans et al., 2017a).

3.4.2 Children and young adults

Researchers have noted that some gambling advertisements appear to be deliberately directed and designed to appeal to children and adolescents in some jurisdictions (e.g., Derevensky, 2008; Gunter, 2019; Monaghan et al., 2008). Gambling advertisements, including those

promoting sports betting, have often used techniques or themes that may appeal to children. For example, research has previously found humour to be an appealing advertising strategy for children (Pitt et al., 2017). 'Cash back' offers (where if part or all of the bet has lost, the stake is returned, usually in the form of a free bet) have been found to reduce children's perceptions that individuals could lose from sports betting (Thomas et al. 2016). These advertisements also demonstrate how someone would place a bet and communicate technical language associated with betting, even though they are broadcast at peak times when a large proportion of the viewers will be children (Pitt et al., 2017). Djohari et al. (2019) reported that young people who had felt more favourably towards sports betting advertising were more likely to perceive betting as a risk-free way to win money. Children have also reported that the inclusion of celebrity figures in advertisements would influence their peers to gamble (Thomas et al., 2016).

A survey of young people in the UK confirmed that some television betting advertisements are perceived to make sports betting look like a fun activity. Almost half of teenagers who took part in a survey endorsed television advertisements for brands such as Paddy Power and Bet365 and said that they made gambling look fun, and look like a good way to make money (Poulter, 2018).

3.5 The impact of sports betting advertising

There are many ways in which sports betting advertising can influence behaviour. It may be that advertising normalises gambling to influence gambling-related attitudes (Thomas et al., 2012), as well as intentions to gamble (Hing et al., 2014d; Lee et al., 2008), or it may act as a direct behaviour trigger (Gunther, 2019).

3.5.1 Sports betting advertising and sports betting attitudes

Sports betting operators employ numerous marketing strategies that seek to influence and stimulate gamblers attitudes towards sports betting. Research into other risky products, such as alcohol, has indicated a stronger behavioural reaction when attitudes to advertisements are positive (e.g., Dormal et al., 2018). Gambling advertising seemingly works by altering how gambling is perceived within particular population groups (Planzer & Wardle, 2012), while minimizing interpretations of risk (Guillou-Landreat et al., 2021).

Previous gambling studies have reported a positive association between exposure to gambling advertising, and attitudes, intentions to gamble, and gambling behaviour (Bouguettaya et al., 2020; Derevensky et al., 2010; Korn et al., 2005). According to the theory of planned behaviour (TPB; Ajzen, 1991), behaviours (such as gambling) are determined by an individual's attitudes, subjective norms, and perceived behavioural control. More specifically, the TPB assumes that behavioural intentions are influenced by the attitude about the likelihood that the behaviour will have the expected outcome. The TPB proposes that individual attitudes, that is, the degree to which an individual has a favourable or unfavourable attitude toward the behaviour of interest, plays a key role in an individual's decision to engage (or not) in that behaviour. Consequently, if regular exposure to sports betting advertising enhances individual attitudes toward the advertisements and the gambling activity that is being marketed, the advertisements may also be influential in facilitating and/or stimulating gambling participation (Flack & Morris, 2015; Hanss et al., 2015).

Social learning Theory (SLT; Bandura, 1977) is a mechanism employed by advertisers to influence gambling behaviour. SLT posits that individuals may develop new expectancies or attitudes about a certain behaviour by analysing the consequences of that behaviour. The media (e.g., television and radio) is one channel which can promote the development of new expectancies and attitudes (Bandura, 2001). Therefore, it is possible that seeing gambling depicted in the media could influence gambling behaviour, particularly if these gambling behaviours result in favourable outcomes. As discussed previously, individuals are typically only shown the positive aspects of sports betting in the media (e.g., Deans et al., 2016b; Gainsbury et al., 2016a), rather than sports betting losses. In addition to being displayed information about positive outcomes, such as winning a sports bet, individuals may also witness positive emotions related to sports betting, such as celebrating winning a bet (Lopez-Gonzalez et al., 2018f). These positive outcomes are then associated with sports betting and might create positive emotional arousal when the individual thinks about sports betting (Bandura, 1986). As a result, these bettors "can acquire lasting attitudes, emotional reactions, and behavioural proclivities toward persons, places, or things that have been associated with it", ultimately associating sports betting with positive emotional consequences (Bandura, 2001, p. 281).

Multiple studies have reported an association between exposure to advertising and more positive sports betting-related attitudes (Hing et al., 2013, 2015d, 2017e, 2018). Underpinned

by the Theory of Reasoned Action (TRA; Fishbein & Ajzen, 1975), Hing et al. (2015d) explored the relationship between gambling sponsorship, and attitudes and intentions towards sports betting in an Australian sample (n=1,000). The TRA suggests that behavioural intention determines an individual's behaviour, and the intention itself is determined by the individual's attitudes and subjective norms surrounding that behaviour (Fishbein & Ajzen, 1975, Fishbein, 1979). The findings indicated that intention to gamble and pre-existing positive attitudes towards sports betting resulted in a favourable view of gambling sponsors of sports, a greater interest in the sponsor's product, and more willingness to consider using these sponsors' products in the future (Hing et al., 2015d).

Attitudes towards sports betting also appear to differ depending on the problem gambling severity status of the individual. For instance, Hing et al. (2017b) conducted a survey study with Australian sports bettors (n=639) and noted that attitudes towards sports betting advertising varied with problem gambling severity. More specifically, online sports bettors with greater problem gambling severity scores had more favourable responses to gambling sponsors, increased attention to, awareness of, and recall of the brand's name and their promotions, and had a greater likelihood of using the sponsor's products (Hing et al., 2017b). In a similar study, Hing et al. (2017e) investigated whether participant responses (n=455) to promotions for online sports betting broadcast during televised sports in Australia varied with problem gambling severity. Results demonstrated that young male online sports bettors were particularly vulnerable to experiencing gambling problems, especially if they had positive attitudes towards sports-embedded gambling promotions and associated promotional techniques, because this increases the risk that appealing advertising messages contribute to problem gambling.

In a qualitative research study conducted with Australian sports bettors (n=39), it was reported that marketing techniques create positive affective responses fostering happiness and joy by appealing to spectators' sense of humour (Lamont et al., 2016). Celebrity endorsements encouraged feelings of trust in some cases, whilst bright and cheery displays conjured feelings of excitement. Furthermore, integrated promotions that were directly based on changing odds during live matches and thereby linking the audience to the game, such as in-match commentary and visual displays of betting odds, aroused more positive affect than non-integrated promotions. Problem gamblers appeared to hold more positive attitudes towards the advertising and promotion of sports betting than non-problem gamblers, and those most likely to be encouraged to gamble from viewing advertisements also appeared to be problem gamblers

(Lamont et al., 2016). In conclusion, holding more favourable attitudes towards the marketing of sports betting products appears to be positively associated with a higher likelihood of betting, and this effect is heightened in those who are already involved or problem sports gamblers.

3.5.1.1 Normalisation of sports betting

Normalisation is one of the longer-lasting impacts of gambling advertising (Parke et al., 2014). It is a long-term progression that involves sub-processes of cultural and legal legitimization (Guillou-Landreat et al., 2021). Presenting betting as a fun, and socially acceptable activity may result in the normalisation of gambling (Lamont et al., 2016). Qualitative research has suggested that sports betting advertising appears to influence gambling attitudes by normalising sports betting, and this is a perception held by adults (Deans et al., 2017a; Thomas et al., 2012), adolescents (Djohari et al., 2019), and children (Pitt et al., 2017; Thomas et al., 2016). Sports betting marketing cues have been bought into daily life (Deans et al., 2017a) and these could normalise potentially risky products depicting their use in day-to-day situations (Guillou-Landreat et al., 2021). This normalisation may in turn encourage gambling commencement from a young age (Monaghan et al., 2008).

One concern is that marketing is presented in a manner that encourages consumers to think of gambling as a sport (Deans et al., 2016b, 2017a; Hing et al., 2014c; Lopez-Gonzalez et al., 2018e) because sport is represented as systematically associated with betting, whilst betting is represented as a sport. In addition, the promotion of gambling has become embedded within specific sporting events, a process that has been referred to as the 'gamblification' of sport (McMullan, 2011). In one study, participants discussed how the saturation of advertising for betting products, including the utilization of sports-specific programmes and sports-related commentary, normalised betting (Deans et al., 2017b). In another, participants discussed how the gambling industry used multiple ways to interject advertising during 'air-time' and subtly embedded gambling into betting commentary (Thomas et al., 2012). In addition, sports betting companies employ high-profile television pundits to feature in their marketing campaigns. It has been argued that children will be familiar with these pundits and therefore, it will normalise gambling for a younger generation (Wall, 2021).

Research conducted by Lopez-Gonzalez et al. (2018f) demonstrated that online sports betting advertising uses the metaphor of betting as a sport, and the wagering operators are therefore associated with the healthy attributes of sport (Lopez-Gonzalez et al., 2018f). Sports betting advertising implies that if betting is a sport, then knowledge, training and skills could help

bettors improve their betting outcomes, and these implications may reinforce cognitive distortions among sports bettors (Lopez-Gonzalez et al., 2018a; Guillou-Landreat et al., 2021). Parrado-González and León-Jariego (2020) argued that since gambling marketing is related to normalisation and favourable attitudes towards gambling, it makes sense to consider advertising as a risk factor for gambling and problem gambling.

3.5.2 Sports betting advertising and sports betting intentions

One of the main goals of gambling advertising is to generate positive consumer dispositions towards gambling with the aim of increasing individuals' intention to place bets (Gunther, 2019). According to the TRA (Fishbein, 1979; Fishbein & Ajzen, 1975), behavioural intention is the best predictor of behaviour. Behavioural intention is comprised of two distinct elements: (i) attitude based on an individuals' evaluation of the behaviour in question, which is determined by their belief about the likely positive or negative consequences of performing the behaviour; and (ii) subjective norms based on societal influence.

Multiple Australian studies have examined the association between exposure to sports betting advertising and sports betting-related intentions or expectancies (Browne et al., 2019, Hing et al., 2013, 2014d, 2015b; Russell et al., 2018). Some studies have reported a positive relationship between self-reported exposure to advertising during televised sports and higher intentions to gamble (Hing et al., 2013, 2014d, 2015d). For example, Hing et al. (2015d) examined the perceived influence of sports embedded promotions. Both in-match commentary concerning betting odds from match commentators and the on-screen display of live odds were found to significantly predict intention to bet on sport (Hing et al., 2015d).

Some gambling researchers have employed ecological momentary assessment (EMA) to explore intentions to gamble. EMA involves the repeated sampling of participants' current experiences in real-time, in their natural environments, with the aim of minimising recall bias and maximising ecological validity (Shiffman et al., 2008). Recently, gambling advertising studies have used EMA in order to reduce recall bias when assessing the relationship between sports betting exposure and sports betting intentions (Browne et al., 2019; Hing et al., 2019; Russell et al., 2018). The information gained through the use of EMA to assess sports betting outcomes could prove useful for identifying individual and situational characteristics that may encourage problematic gambling behaviour. As Hing et al. (2018) argues, experiencing sports

betting advertising does not typically occur in isolation, but instead, they are received within a broader external environment of social processes and influences that will affect how they are processed and the impact that they may have.

Employing EMA, Browne et al. (2019) reported that direct messaging in the form of emails, text messages and phone calls from betting companies were positively associated with sports betting intentions. Whereas, other forms of advertising, for example, television advertisements, betting brands promoted during live television, and social media posts were not. Similarly, Russell et al. (2018) reported that direct forms of wagering advertising were used to promote specific wagering inducements, and these forms of marketing appear to be particularly influential on betting intentions (Russell et al., 2018). As a result, Browne et al. (2019) suggested introducing a regulatory measure to ban this type of push advertising, or to use an opt-in, rather than opt-out system to receive these targeted inducements.

3.5.3 Sports betting advertising and sports betting behaviours

One area under consideration is the extent to which gambling advertisements influence gambling behaviour (e.g., Griffiths, 2005; Hing et al., 2014e). In a critical review of gambling advertising research, Binde (2014) deduced that although there is an absence of supporting evidence, it was probable that gambling advertising influenced gambling behaviour. However, the causal mechanisms of the impact of advertising on gambling behaviour are currently unknown, despite an increasing body of evidence (Gunter, 2019; Griffiths, 2005).

There is some survey-based evidence to suggest that sports betting advertising influences sports betting behaviours. For example, Hing et al. (2019) conducted surveys based on an EMA design over three non-consecutive weeks with 722 Australian bettors (402 race bettors and 320 sports bettors). The EMA surveys assessed exposure to wagering advertisements and their perceived influence on betting behaviour. Bettors reported that direct messages and advertisements on betting websites or apps were the most influential form of advertising on their betting behaviours, and wagering inducements were also found to lead to bettors placing more and larger bets. Moreover, race bettors with gambling problems were more likely to report being influenced by advertisements than non-problem gamblers (Hing et al., 2019).

Browne et al. (2019) conducted an EMA (n=597) with Australian sports bettors. After exposure to sports betting television advertisements, participants reported a higher likelihood of sports betting, higher actual and intended betting expenditure, and spending more money than intended (calculated by subtracting the actual betting spend from the intended betting spend). Russell et al. (2018) conducted an EMA with 202 Australian participants and reported that direct advertising messages via text message were positively associated with betting expenditure. The authors suggest that the relationship between texts and subsequent betting behaviour indicated impulsive responses to this marketing, and this impulsive betting was observed across all problem gambling severity groups. Betting as a result of receiving text messages may be impulsive and unplanned, which is a concern as these factors are a known risk factor for gambling-related harm and problem gambling. Therefore, Russell et al. (2018) posited that direct promotional messages are an influential but also potentially harmful promotional strategy.

Evidence suggests advertising encourages an increase in gambling among those who are already gamblers (Binde, 2009; 2014; Hing et al., 2014c). As well as normalising gambling and providing encouragement for continued gambling, advertising increases the risk of relapse for individuals who are trying to stop or reduce their wagering (Binde, 2014). A further explanation for the impact of gambling advertising is that it possibly triggers impulses to gamble, particularly for problem gamblers, and influences their ability to gamble in a controlled manner (Binde, 2007, 2009; Hing et al., 2014c). For sports bettors specifically, problem gamblers have been identified as more likely to place impulse bets in response to the promotion of sports betting, compared to non-problem gamblers (Hing et al., 2014c, 2015d, 2018). Sports betting marketing and offers sent via direct messages such as email and text message are particularly likely to increase the likelihood of impulsive online sports betting (Hing et al., 2018b; Russell et al., 2018).

Ultimately, gambling advertisements have been found to have the largest effect on problem gamblers, by increasing the urge to gamble (Derevensky et al., 2010; Gainsbury et al., 2016b; Hing et al., 2014e). The self-perceived influence of gambling marketing is greater among problem gamblers and higher influence is typically reported in the form of increased gambling urges and increased gambling (Binde, 2014; Newall et al., 2019c). Planzer and Wardle (2012) suggested that gambling advertisements may work by triggering consumption among at-risk and problem gamblers. Possible explanations for this association include that individuals experiencing gambling problems may be more attentive to this marketing, they may receive

gambling marketing more frequently due to their gambling history, or exposure to gambling advertising contributes to the development of gambling.

3.6 Sports betting advertising and in-play betting odds

Advertising for in-play betting makes up a large proportion of the bets that are promoted on UK television (Newall, 2015, 2017; Newall et al., 2019a; Lopez-Gonzalez et al., 2018c). Similarly, Australian researchers have indicated that live in-play promotional incentives have become unavoidable during sports coverage (Deans et al., 2017a; Thomas et al., 2012). Newall et al. (2019a) conducted an analysis of British gambling television advertisements and reported that 69 in-play betting advertisements were broadcast over 23 football matches, by five bookmakers. Furthermore, some in-play betting odds were found to include additional incentives, such as "flash odds", which were limited both in time and the number that were available to claim. Newall et al. (2019a) argued that these in-play betting advertisements (e.g., the broadcasting of live odds) reinforce cognitive biases associated with erroneous probabilistic thinking, often encouraging the placement of impulsive and urgent bets. Qualitative research has also indicated that exposure to indirect marketing, such as live-odds being announced during live sports events, may make individuals more likely to place impulse bets in response, and this effect is greater for those scoring higher on problem gambling measures (Lamont et al., 2016).

Previous research has indicated that in-play betting is particularly attractive to to individuals experiencing gambling problems (Gainsbury et al., 2020; Killick & Griffiths, 2019; Lopez-Gonzalez et al., 2019a). In an experimental study conducted by Hing et al. (2017b), participants were shown several mock advertisements in order to determine which elements of sports betting advertisements were the most successful in attracting attention, desire, interest, and likelihood of betting across non-problem, low-risk, moderate-risk and problem gamblers. Those classed as moderate to high-risk problem gamblers were more attracted to advertisements displaying in-play micro bets (where bets can be wagered in-play on short-term events, such as the next point in tennis). The authors argue that the appeal of in-play betting advertisements, including micro-bets, is in line with the evidence that suggests that these bet types pose the largest problem gambling risk across all types of bets because they allow for high-frequency, repetitive betting on short-term outcomes (Hing et al., 2017b).

3.7 Limitations of sports betting advertising research

More sports betting advertising is being targeted at the individual level (e.g., direct text messages), and therefore it is becoming increasingly challenging to measure (Newall et al., 2019c). Sports bettors can estimate exposure to advertising of various kinds, but it is likely that these estimates are biased by recall errors, differing interest in the product or promotion that is being marketed, and other individual and psychological influences (Binde & Romilde, 2019). Gunter (2019) argued that to determine whether gambling advertising really does impact gambling behaviour, there is a need for evidence that goes beyond the subjective opinions of those who gamble. This means using independent and objective data on the rate of gambling behaviour and distinct data about actual exposure to gambling advertising (Gunter, 2019).

Some studies utilized a real-time and ecologically valid measure of exposure to sports betting marketing through EMA. EMA is suitable for capturing intermittent experiences in the real-world, such as exposure to sports betting marketing. EMA can offer real-time tracking of exposure and attitudes towards sports betting marketing closer to the moment of exposure, instead of relying on retrospective recall. However, a more reliable approach to the study of cause-effect relationships is to use an experimental methodology in order to examine the relationship between variables. This allows researchers to control exposure to advertisements and behavioural response data collected in response to advertising. Recent research using eye tracking experiments (e.g., Breuer et al., 2021; Lole et al., 2019, 2020) may offer an objective and unbiased insight into the aspects of wagering marketing that sports bettors find most appealing (Binde, 2014; Lole et al., 2019; McGrath et al., 2018). At the very least, using standardised definitions and measurement of advertising exposure and gambling behaviour would aid in the understanding of the causal mechanisms involved (Bouguettaya et al., 2020).

3.8 Conclusion, policy implications, and future directions

The development of new technologies and expansion of online sports betting products has resulted in a large penetration of gambling products around the world. This has been accompanied by an explosion of sports-betting advertisements through multiple marketing channels. The growth of gambling marketing and advertising, together with developments in technology, has resulted in concerns about potentially negative effects of marketing and advertising, especially upon children, young adults, and vulnerable individuals (Responsible Gambling Strategy Board, 2016). Therefore, examining the impact of this form of marketing, on both healthy and vulnerable individuals, is extremely important.

The impact of advertising on the development of gambling problems remains largely unknown, and this is the case for different types of gambling activity, including sports betting, and across different types of advertisements (Labrador et al., 2021). The impact of gambling advertising on the whole population and on the prevalence of problem gambling is challenging to measure (Planzer & Wardle, 2012). Moreover, the evidence of specific effects on certain groups is inconclusive, in addition to the process in which advertising facilitates problem gambling (Labrador et al., 2021). This disparity in the data available could be due to the evaluation methods, target populations, methods of advertising, and the games that are advertised (Labrador et al., 2021).

Centred on the diagnostic characteristics of gambling disorder, including 'chasing losses', loss of control, and financial difficulties (American Psychiatric Association, 2013; Petry et al., 2005), a number of the specific elements in sports betting advertising may be viewed as potentially risky, including the message that gambling is free or can be performed without access to money, such as through bonuses (Hing et al., 2017d, 2018). These sports betting incentives have been found to be particularly appealing to individuals experiencing gambling problems and younger men (Thomas et al., 2012). Sports betting marketing appears to be highly targeted at male sports fans, for whom it may be unavoidable (Newall et al., 2019c). Sports betting marketing also contributes to the myth of gambling as a sport, and displays gambling as an activity with reduced risk, that can be mastered with talent and practice (Lopez-Gonzalez et al., 2018a).

There are many ways in which advertising can influence sports betting behaviour. It can encourage positive dispositions towards the sports betting product in the form of favourable attitudes and beliefs, and it can promote a degree of normality about sports betting. These advertisements often work by presenting positive incentives and reasons to accept its persuasive appeals, in addition to creating a familiarity with a brand in a way that those who are repeatedly exposed to its messages remember it (Gunter, 2019). Furthermore, sports betting advertisements and wagering inducements remind gamblers of the continual availability and constant accessibility of betting opportunities.

It has been argued that the regulation of gambling advertising on social media has not yet sufficiently addressed newer challenges emerging from this technological shift, particularly in respect of the needs of minors and vulnerable individuals (Hörnle & Malgorzata, 2018). Rossi

et al. (2021) argue that social media advertising presents further opportunities for marketing that are beyond the remit and considerations of traditional advertising regulations such as immediate links to betting on a mobile phone, a high volume of gambling advertisements that normalise the activity, encouraging engagement and sharing content that exposes children to gambling, and exposure to gambling opportunities at night. However, there has recently been some efforts made to enforce restrictions on gambling advertising on social media platforms; in February 2021, the Betting and Gambling Council (BGC) introduced a new code of conduct, in which links to gambling websites would not be permitted on organic tweets on the social media feeds of football clubs (Betting and Gaming Council, 2021).

Evidence to support the direct impact of gambling advertising on the prevalence of problem gambling has been weak thus far. It is difficult to ascertain the number of individuals with gambling problems due to advertising, possibly because of the small impact that it may have (Binde, 2014), or because it may not be the most relevant factor. Binde (2007) suggested that on the basis of the research to date, it can be concluded that advertising increases the prevalence of problem gambling but its impact is less severe than those of other pertinent factors. Griffiths (2005) suggested that design characteristics, and speed of play are likely to have more of an impact.

It is known that problem gambling can cause serious risks to an individuals' health, finances, and social situation, and that problem gambling can also impact on the gambler's families and local communities (Griffiths, 2004). Although there has been a proliferation of gambling research focusing on the individual factors that may be attributed to the acquisition and development (and minimisation) of problem gambling, there is much less research concerning the external factors that may lead to problem gambling. With an increase in knowledge concerning different types of gambling, there will be a greater understanding of how marketing strategies play a role in changing sports betting attitudes and subsequent behaviours. As a result, policy and regulatory requirements can be formulated to ensure that they are effective in preventing any harmful or potentially harmful consumption of these products.

Chapter 4: Methodology

4.1 Chapter Overview

The overall aims of this thesis are to examine what factors make online sports betting potentially addictive and how it is accessed by bettors, the impact of sports betting advertising, and to examine the structural characteristics of online sports betting. To begin with, a scoping study was carried out to examine the current state of the literature, including peer reviewed and "grey" literature, which included government reports and policy statements, in order to gather data pertaining to what is known about in-play sports betting. The second study was a content analysis of marketing strategies used by British gambling operators on *Twitter.* The third and fourth studies involved in-depth semi-structured qualitative interviews with online sports bettors to highlight attitudes and opinions towards online sports betting, online sports betting marketing, and to explore motivating factors for engaging in online sports betting and in-play sports betting. The fifth study was an online quantitative survey to empirically test research questions that were derived from the results from studies 1, 2, 3 and 4 of the thesis on a much larger sample. This chapter will begin with a description of the theoretical and methodological debates surrounding quantitative, qualitative, and mixed method paradigms and the rationale behind using the mixed method approach for this thesis.

4.2 Differences between quantitative and qualitative research

The qualitative-quantitative debate, which flourished in the 1970s and 1980s, grew from one about the incompatibility of quantitative and qualitative technical issues and procedures into a debate about the incompatibility of epistemological assumptions (Hathcoat & Meixner, 2015). The "incompatibility thesis" (Howe, 1988) asserts that quantitative and qualitative paradigms are inherently incompatible, not only due to differences in their strategies of enquiries, but also their research goals and underlying epistemologies (Karasz & Singelis, 2009).

On one hand, quantitative and qualitative allude to differences in the nature of knowledge, that is, how individuals understand the world and the main objective of the research (i.e., the philosophical issues that refer to the questions of epistemology). Alternatively, the terms refer to the research methods and issues relating to the consideration of the appropriateness of the research methods employed in comparison to one another (Cleland, 2015). This includes the various methods of data collection and analysis, and the type of representations and generalizations derived from the data (Cleland, 2015).

Quantitative research has been described as a type of research that explains phenomena according to numerical data that are analysed by means of mathematically based systems, such as statistics (Aliaga & Gunderson, 2005). There are four broad approaches to study design within quantitative research: experimental, descriptive, correlational, and quasi-experimental (Cleland, 2015) that usually involves describing the phenomena according to some form of numerical system (McQueen & Knussen, 2013).

Qualitative data, on the other hand, has been described as a source of rich, well-grounded descriptions and explanations of processes within local contexts (Miles & Huberman, 2019). Within qualitative data, a chronological flow can be used to examine exactly which events lead to which outcomes, in order to derive meaningful explanations (Miles & Huberman, 2019). Qualitative research is usually associated with unstructured and semi-structured interviewing, participant observation, focus groups, qualitative examinations of text, and several language-based techniques such as discourse and conversation analysis (Bryman, 2017).

Data collected through qualitative methods, as with any other research, requires a concise and justified research question that indicates that the research is original, timely, relevant and rigorous (Lingard, 2015). A high-quality qualitative study will include a theoretical or conceptual framework that is aligned with the study design, the research question(s) and the methodology used in the research. (Stenfors et al., 2020).

Qualitative methodology should be selected that allows participants to express themselves openly and without constraint (Austin & Sutton, 2014). This can be much more time consuming than conducting quantitative research. Qualitative interviewing research involves using the researcher as an instrument for qualitative data collection (Cassell, 2005; Turato, 2005) and is expected to be flexible and reflexive. Quantitative research, on the other hand, uses a pre-determined research tool, which provides less reflexivity and flexibility (Brannen, 2017).

It has been argued that the differences between quantitative and qualitative methods are not as set in stone as they may seem, and the two methods do not need to directly oppose one another, but rather, they can successfully overlap or co-exist, within the same study (Bryman, 2006). But whichever methods are used, Oakley (1999, p.252) argues that "*all* methods must be open, consistently applied and replicable by others". Ultimately, qualitative and quantitative methods in the social sciences share the goal of understanding and improving the human condition, by employing conscientiousness, rigour, and critique in the research procedure (Reichardt & Rallis, 1994).

4.3 Philosophical assumptions

In social research, "paradigm" denotes the philosophical assumptions that guide the actions and define the worldview of the researcher (Lincoln et al., 2011). While there are several paradigms that structure and organize modern research (e.g., pragmatism, post-positivism, constructivism, and participatory action frameworks), they are all fundamentally philosophical in nature and incorporate four assumptions, which are the most relevant to defining a paradigm in a research context (Kivunja & Kuyini, 2017). Research is conducted from various standpoints on the nature of reality (ontology) (Kivunja & Kuyini, 2017); what knowledge is and "understanding and explaining how we know what we know" (epistemology) (Crotty, 2003, p.3); the most appropriate research approach (methodology) and the ethical issues and values that need to be considered when planning research (axiology). These research paradigms help to determine which type of approach is used to answer a given research question (Kivunja & Kuyini, 2017).

In mixed methods research, pragmatism is the most commonly adopted worldview (Kaushik & Walsh, 2019; Teddlie & Tashakkori, 2009). Mixed methods investigators endorse pragmatism as a paradigm by asserting that it is directly associated with the requirements of mixed methods research. Pragmatism is often associated with mixed methods where attention is given to the research questions and the consequences of the research rather than on the methods (Kaushik & Walsh, 2019).

Scholars suggest that pragmatism provides a philosophical foundation for research within the social sciences in general, and mixed methods research, in particular (Morgan, 2017). This approach offers a different worldview to those of post-positivism/positivism and constructivism. The approach allows researchers to disregard the forced dichotomies of constructivism and post-positivism, and rejects the traditional philosophical dichotomy of subjectivity and objectivity. In pragmatism, empirical is preferred over idealistic or rationalist approaches (Kaushik & Walsh, 2019). As a philosophical underpinning for mixed methods research, it focuses attention on the research problem and then uses a pluralistic approach to gain knowledge about that problem (Morgan, 2017). It "sidesteps the contentious issues of truth and reality" (Feilzer, 2010, p.8) and "focuses instead on 'what works' as the truth regarding the research questions under investigation" (Tashakkori & Teddlie 2003, p. 71).

Pragmatism rejects the choice relating to the paradigm debate, and research often includes triangulation and prolonged engagement, which enables researchers to address their own

concerns, and also captures the voice of others (Onwuegbuzie & Leech, 2005). Pragmatism accommodates multiple stances and values, and for mixed methods research, it permits different assumptions, worldviews, in addition to different forms of data collection and analysis (Creswell, 2014).

4.4 'Mixed methods' research

Multi-method research is a broad category that involves using any two or more different research methods in order to address research questions/and or hypotheses. Mixed methods is a specific subset of multi-methods research, which is typically characterised by the integration of at least one qualitative and one quantitative research element (Fetters & Molina-Azorin, 2017; Schoonenboom & Johnson, 2017). More specifically, mixed methods is a research approach that involves the collection, analysis, integration of findings and inferences drawn by using at least one qualitative and at least one quantitative approach combined within the same study (Bowers et al., 2013; Creswell, 2014; Schoonenboom & Johnson, 2017).

In order for research to be thought of as a true mixed methods study, there must be an integration of the data in at least one (or more) stage of the research process (Creswell, 2014). This evolution of mixed methods research could be seen as "a third methodological movement" (Doyle et al., 2009, p. 184) and mixed methods is recognized as a third major research approach or paradigm (Johnson et al., 2007).

The idea of combining different methods stemmed from Campbell and Fisk (1959), who employed multiple methods to investigate the validity of psychological traits. Mixed methods research uses the potential strengths of both qualitative and quantitative methods (Johnson & Onwuegbuzie, 2004), whilst minimising the potential weaknesses, allowing for the explorations of different perspectives and examines relationships that exist within multifaceted research questions. Hurmerinta et al. (2006) argue that using a mixed methods approach allows researchers to gain a broader, deeper understanding of the phenomenon in comparison with other studies that do not use both a qualitative and quantitative approach. Furthermore, all methods have weaknesses, so mixed methods can be used to balance these strengths and weaknesses (Gray, 2014).

There are arguments that have been proposed for the integration of qualitative and quantitative methods in a single study (Sale et al., 2002). For example, it has been argued that mixed methods research enables investigators to generalize the results from a sample to a population,

and produces a richer, deeper, contextual understanding of the phenomenon under examination (Hanson et al., 2005). Qualitative research allows for the analysis of concrete cases in their "temporal and local particularity" (Flick, 2009, p.13). Quantitative research, on the other hand, allows researchers to identify relationships between variables and to make generalizations about the findings beyond the particular situation involved in that study (Creswell, 2014).

However, just because quantitative and qualitative methods are often integrated, does not mean that it is always appropriate to do so (Fetters et al., 2017). It is therefore important that the researcher outlines the specific aims of each approach, the type of data that is expected to be collected, and how the data links to theory (Schoonenboom & Johnnson, 2017). If the results from different methods oppose one another, which is not unusual, then these differences should be examined during interpretation of the data, particularly in terms of the data, methods, and theory (Bryman, 2017). Bryman (2017) also recommends that discrepancies between the findings resulting from the research should encourage the examination of particular issues in further detail, which might uncover new or additional theories and more valuable areas of enquiry in their own right.

4.4.1 Choosing a mixed methods approach

There are a number of benefits to using mixed methods, including: gaining a deeper and broader understanding of the phenomenon (McKim, 2017); the production of more valid results as the strengths of one method can offset the limitations of another (Scandura & Williams, 2000); having more confidence in the findings and conclusions that are drawn from the study (O'Cathain, 2010) and making the findings more easy to comprehend for readers and helping them to grasp the meaning of complex phenomena (McKim, 2017).

Mixed methods should be based upon the type of questions being addressed and how the design can aid in answering these questions. It can be useful to adopt a mixed methods approach where the area of research is complex and requires data from multiple perspectives (Schoonenboom & Johnson, 2017). In 1989, Greene et al. suggested five purposes for mixed methods research (p.259):

1. *Triangulation* seeks convergence, corroboration, and correspondence of results from different methods;

2. *Complementarity* seeks elaboration, enhancement, illustration, clarification of the results from one method with the results from the other method;

3. *Development* seeks to use the results from one method to help develop or inform the other method, where development is broadly construed to include sampling and implementation, as well as measurement decisions;

4. *Initiation* seeks the discovery of paradox and contradiction, new perspectives of frameworks, the recasting of questions or results from one method with questions or results from the other method;

5. *Expansion* seeks to extend the breadth and range of inquiry by using different methods for different inquiry components.

Using multiple methods allow for the results to converge or corroborate one another, strengthening the validity and reliability of the findings (Abowitz & Toole, 2010) and the combination of quantitative and qualitative data provides a more complete picture by observing generalisations and trends in addition to in-depth knowledge of participants' perspectives (Creswell & Plano Clark, 2018). Therefore, this thesis will employ a mixed methods research approach.

4.4.2 Conducting mixed methods research

Mixed methods can combine and balance the designs to utilise the strengths of both types of method, however, there is no widely accepted set of ideas in terms of a conceptual framework to guide mixed methods research (Evans et al., 2011). The chosen design will depend on the kinds of research questions being asked, and how the combination of methods can bring added dimensions to the research.

Mixed methods can be both 'fixed' or 'flexible' (Robson, 2002). Fixed refers to theory-driven research which is conducted to test specific theories and hypotheses, whereas, flexible designs are more exploratory in nature, with the researcher having less control over variables that contribute to the results (Robson, 2002).

There are three prominent design classifications for mixed methods research: sequential mixed methods; concurrent mixed methods; and transformative mixed methods (Creswell, 2014). Firstly, transformative mixed methods is a design that "uses a theoretical lens drawn from both social just or power as an overarching perspective within a design that contains both quantitative and qualitative data" (p.44). Concurrent mixed methods procedures, on the other hand, involve the collection of both qualitative and quantitative data simultaneously. Finally,

sequential mixed methods procedures are those where either qualitative or quantitative data are collected first (Creswell, 2014).

In sequential mixed methods, the findings from the first method typically feed into the design of the second (Creswell & Plano Clark, 2018). In some cases where qualitative research is followed by quantitative methods, the qualitative research is a "prestudy" to the quantitative research (Glaser & Holton, 2007). The results from the qualitative phase are then used to direct the quantitative phase of the research, such as informing the development of specific research questions. This has been termed the *exploratory sequential design*, and may be used to test the validity of qualitative findings to a wider population, or when important issues need to be identified (Creswell & Plano Clark, 2018).

A sequential mixed methods approach was adopted for this thesis. There were two main benefits for conducting this type of mixed methods research; firstly, as Teddlie & Tashakorri (2009) propose, sequential mixed methods allow for the research to unfold in a more predictable manner and makes it easy for one researcher to implement. Secondly, this design allows for the phenomenon to be explored in depth with a few participants (in the interview studies) and then these findings can be expanded to a larger population (in the online survey study) (Teddlie & Tashakorri, 2009). A further motivation for using a mixed methods approach for this thesis was that the findings from the qualitative interview studies and content analysis study were used to inform the development, and variables of interest, in the online survey study. The qualitative research from Chapters 7 and 8, in particular, were used to shape the quantitative survey that followed, a strategy known as instrument development design (Harrison & Reilly, 2011).

4.4.3 Triangulation

One commonly cited mixed method design is triangulation (e.g., Greene et al., 1989, 1997; Morse, 1991) and it is a frequently used context for the integration of quantitative and qualitative research (Bryman, 2006). There are four types of triangulation: theory triangulation (the use of multiple theories to analyse and interpret data), investigator triangulation (the use of more than one research in a study to produce multiple conclusions), data triangulation (collecting data from multiple sources), and methodological triangulation (the use of multiple methods of data collection) (Denzin, 2006). This thesis employed more than one method to gather the data, thus applying methodological triangulation through: (i) data collected online

(studies 1 and 2), (ii) conducted interviews (studies 3 and 4), and (iii) online surveys (studies 5 and 6) in order to address the research aims.

The purpose of the triangulation design is to "obtain different but complementary data on the same topic" (Morse, 1991, p.122) to best address the research problem. Triangulation is the "attempt to map out, or explain more fully, the richness and complexity of human behaviour by studying it from more than one standpoint" (Cohen & Manion, 2000, p.254). Triangulation synthesizes data in order to highlight the value of a phenomenon with greater accuracy by researching it from multiple viewpoints. Combining methods allows for one method to compensate for the weaknesses of the other, but the different methods remain independent, operating adjacent to one another (Flick, 2006). The results converge or corroborate one another, therefore enhancing the validity of the conclusions made about the data (Greene et al., 1989).

4.5 Using the internet for research

Studies 1, 2, 5 and 6 used the internet for data collection, but in differing ways. For Study 1, online sports betting websites were examined in order to identify particular online sports betting features related to the structural characteristics of online sports betting. Study 2 involved conducting a content analysis of marketing content posted on Twitter, and Studies 5 and 6 comprised an online survey quantitatively examining sports bettors' sociodemographic characteristics and gambling behaviours.

The use of the internet to conduct research has become increasingly popular over the last decade or so. Kraut et al. (2004) argued that the internet "has the potential for unparalleled impact on the conduct of psychological research, changing the way psychologists collaborate, collect data, and disseminate their results" (p.105). Online surveys have several advantages over paper-and-pencil surveys that include; lower administrative costs, ease of data entry, reduced response time, flexibility over the format and advancements in technology (Granello & Wheaton, 2004). Further advantages include the opportunity to recruit large heterogenous samples and individuals or groups with certain characteristics (Kraut, 2004), ease of access for participants, truly voluntary participation, the simultaneous participation of multiple people is possible, and the reduction of experimenter effects and reduced demand characteristics (Reips, 2006). Griffiths (2010, p.10) highlighted the advantages of using the internet for gambling research:

- The internet can be a useful medium for eliciting rich and detailed data in sensitive areas such as gambling addictions.
- The internet has a disinhibiting effect on users and reduces social desirability. For populations discussing sensitive issues like addiction, this may lead to increased levels of honesty and therefore higher validity in the case of self-report.
- The internet provides access to individuals (e.g., those with addictions to gambling and video games) who may not have taken part in the research if it was offline.
- It has a potentially global pool of participants. Therefore, researchers are able to study extreme and uncommon behaviours (such as addicted individuals) as well as make cost-effective cross-cultural comparisons.
- The internet provides access to "socially unskilled" individuals (e.g., video game addicts) who may not have taken part in face-to-face situations.
- It can aid participant recruitment through advertising on lots of different bulletin boards and web sites (e.g., gambling chat rooms, gaming forums).
- The internet can contain archived material allowing time-based qualitative research can be carried out.
- It can produce data that in most cases can be automatically transcribed which suits some particular psychological methodologies (e.g., interpretative phenomenological analysis, discourse analysis, etc.)

Griffiths (2010) also notes issues such a generalisability, reliability, and validity can occur; however, these are equally probable in offline environments. Griffiths and Witty (2010) also argue that other gambling research using online research methodologies may also face problems relating to a lack of knowledge about participant behaviour, a lack of researcher control, and software/hardware variability. A further issue is that it can be difficult to confirm that the participants are who they claim to be (e.g., over the age of 18 years old, is really experiencing gambling problemsetc.). A potential drawback of online research is that it requires that participants are able to access a computer, laptop or other mobile device, and the internet, but since these studies were designed for and targeted online sports bettors this was not a concern.

4.6 An outline of the studies

4.6.1 Study 1- Scoping study

The first study conducted was a scoping review. The review aimed to 'scope' the current and "grey" literature, which included collecting data from online gambling websites as well as published papers, in order to gain a better understanding of the impact of the structural characteristics of online sports betting on the behaviour of players. More specifically, the study examined what information, at the time of writing, was available that pertained to online in-play sports betting.

The aim of a scoping review is to map literature on a certain subject and explore the underpinnings of a research area, as well as identify and clarify the key concepts, theories, sources of evidence and gaps in the research (Arksey & O'Malley, 2005; Daudt et al., 2013). Researchers use scoping reviews to address broad topics that can include many different study designs and methods (Arksey & O'Malley, 2005). Scoping reviews can be conducted as a stand-alone summary of research, or as part of an ongoing review (Arksey & O'Malley, 2005).

Scoping reviews share a number of similarities with systematic reviews, as they both employ transparent and rigorous methods in order to make sure that the results are reliable (Munn et al. 2018). The main difference is that scoping reviews address broader topics (Arksey & O'Malley, 2005), whereas the purpose of a systematic review is to identify, appraise and synthesise the best available research on a specific question (Uman, 2011). Munn et al. (2018, p.2) suggested the following reasons for conducting a scoping review: (i) to clarify key concepts in the literature; (ii) to identify the type of evidence available in a given area; (iii) to examine how research is conducted on a certain topic; (iv) as a precursor to a systematic review; (v) to identify and analyse knowledge gaps.

When conducting a scoping review, it is important to clearly define the key question and objectives in order to: (i) avoid any lack of clarity which can lead to difficulties further along the review process (Peters, 2016); and (ii) increase the efficiency and quality of future research synthesis (Levac et al., 2010). Davis et al. (2009) argues that the optimal scoping study is one that employs methodological and procedural rigor in its application.

A scoping study was conducted in order to investigate the psychological implications of in-play sports betting in further detail. This was achieved by accessing online gambling websites and examining the in-play betting literature. The aim of the study was to find out what in-play betting features have been made available for online sports betting users, what empirical

research has been carried out on in-play sports betting, and what has been theorised or speculated upon concerning in-play sports betting in the gambling studies literature. In addition, the scoping study highlighted and identified important areas for further empirical research. For a detailed account of the scoping study see Chapter 5.

4.6.2 Study 2- A content analysis study

Study 2 sought to provide a snapshot content analysis of social media marketing on Twitter among the ten largest online sports betting operators in the UK over a specific time period. The next section of this chapter will describe content analysis methodology and Study 2 in more detail.

4.6.2.1 An overview of content analysis

Content analysis is often defined as a replicable, valid, and systematic technique for compressing multiple words into fewer content categories depending on explicit rules of coding which have been set out in the method (Berelson, 1952; Krippendorff, 2018). It can be used to develop concepts, categories, and themes (Kyngäs, 2019). It allows for the creation of inferences from observed communications, the extraction of manifest as well as latent content, and allows for the synthesis of large volumes of data (Krippendorf, 2018). Content analysis is applied to a wide range of data sources, including visual stimuli (e.g., photographs/videos), textual data, audio data, and other forms of communication (Krippendorff, 2018; Stemler, 2015).

One method of content analysis is to address the manifest content, that is the data that is on the surface and physically present (Kleinheksel, 2020). The alternative is to consider the latent content, which is the observable content that cannot be measure directly but can be measured or represented by one or more indicators (Krippendorf, 2018). Latent and manifest messages study different aspects of a message; latent examines the more subtle aspects that are hidden within the text, while manifest examines the straightforward and obvious aspects (Krippendorf, 2018). With manifest content analysis, there is no need to identify deeper meaning or discern intent (Kleinheksel, 2020).

Quantitative content analysis, on the other hand, employs a positivist manifest content analysis, in that the phenomenon is perceived to be observable, measurable, and objective (Kleinheksel, 2020). Quantitative content analysis begins with a frame hypothesis with coding decided prior to analysis, employs objective analysis of the coded frequencies, and adopts a deductive

approach. However, an overlap between qualitative and quantitative analysis has been acknowledged. Krippendorf (2018) questioned the validity and usefulness of the distinction between qualitative and quantitative content analysis, arguing that all text is qualitative, even if certain characteristics of this text are subsequently converted to numbers.

Content analysis may be used in an inductive or deductive way. The approach that is used is determined by the aims of the study (Elo et al., 2014). An inductive approach is recommended when there is not enough formed knowledge regarding the phenomenon or if this knowledge is partial, unstructured and/or insufficient (Kyngäs, 2020), and it is used to create concepts, themes and categories from data (Kyngäs, 2020). Deductive content analysis is applied when the analysis is based on previous knowledge, the research aims are to compare categories at different time periods, or test a theory in a different situation (Kyngäs, 2020).

Hsieh and Shannon (2005) identified three main applications of qualitative content analysis approaches: directed, conventional, and summative. The three approaches are used to interpret text data primarily from a naturalistic paradigm (Hsieh & Shannon, 2005). The authors argue that direct content analysis might be chosen when some prior research or existing theory is available about a phenomenon that is insufficient or may benefit from additional description. Conventional content analysis is appropriate when existing research literature or existing theory about a phenomenon is limited. In the case of conventional content analysis, researchers avoid using preconceived categories, but rather allow for categories and names of categories to flow from the data (Hsieh & Shannon, 2005). Summative content analysis begins with identifying and quantifying particular words with the aim of understanding the contextual use of the word. The quantification is used to explore usage, rather than infer meaning. A summative approach goes beyond simple word counts to include latent content analysis, which refers to interpretations of the content. The aim of this type of analysis is to discover the underlying meaning of the content or words (Hsieh & Shannon, 2005).

4.6.3.2 Content analysis research and Twitter

A recent systematic review of social media research on gambling by James and Bradley (2021) identified that the majority of research in this area has been conducted in the past five years and can be categorised into three themes: (i) communication, (ii) community, and (iii) calculation (of sentiment). Research categorised as communication focused on the content of gambling advertising on social media and the impact on individuals exposed to it. The theme community refers to research using data from gambling forums, either forums where gamblers

share tips and strategies, or those where they seek support and advice from other gamblers. Finally, calculation, where social media research is used to understand the sentiment of individuals posting about events that can be wagered on such as sporting events. For each type of research, the findings can be used to inform policy, practice, and recreational gambling behaviour (James & Bradley, 2021).

4.6.3.4 Content analysis strategy for Study 2

Study 2 sought to explore: (i) how gambling operators promote their products on *Twitter*, (ii) how Twitter features are used by gambling operators, such as the use of hashtags, (iii) how gambling operators interact with their followers, and (iv) implications that the findings may have on the regulation of sports betting advertising via Twitter.

In line with the standard content analysis method (Neuendorf, 2017) a codebook was developed. The codebook consisted of five parts: (i) user engagement, (ii) content of posting, (iii) responsible gambling messages, (iv) use of hashtags, and (v) promotional content. Each theme had a series of different categories which were applied to each gambling operator, and coding frameworks were developed using a directed and inductive approach.

The first part of the codebook (user engagement) was designed to measure gamblers engagement with the gambling operators' Twitter pages and was assessed using indicators such as the number of 'favourites', retweets, and poll votes using quantitative content analysis. Berelson (1952) defined quantitative content analysis as "a research technique for the systematic, objective, and quantitative description of the manifest content of communication" (p. 18). A descriptive process was followed that comprised segmenting the communication content into units, assigning each unit to a category, and providing counts for each category (Krippendorff, 2018).

Three parts of the codebook had not been previously studied on *Twitter* at the time of writing; responsible gambling messages, hashtag use, and promotional content. Therefore, an inductive approach was taken for the coding of these categories. The *Twitter* posts were organised, a process which included open coding, creating categories, and abstraction (Elo et al., 2014). Abstraction refers to creating a general description of the research topic by generating content categories, and each of these categories were labelled using content-characteristic words (Elo et al., 2014). This approach involved going beyond solely word counts to include latent content analysis (i.e., a summative content analysis, Hsieh & Shannon, 2005). More specifically,

keywords were counted and compared, and afterwards their underlying latent meanings were interpreted (Hsieh & Shannon, 2005).

The final part of the codebook, promotional content, utilised nine content categories that had been previously identified by Houghton et al. (2019). Thus, deductive codes were generated from this study. The coded segments of the text fit within the coding framework, and therefore, no new categories needed to be created (Armat et al., 2018). Please see Chapter 6 for the codebook utilised in this study.

4.6.3 Study 3 and 4 - The qualitative studies

The third and fourth studies of the thesis were the qualitative studies. The aim of these studies was to explore sports bettors' attitudes towards newer features of online sports betting, and the marketing and advertising of sports betting products. The next part of this chapter will discuss these studies in detail, including the design of the semi-structured interviews, the coding approach and the use of thematic analysis, as well as discussing ethical issues in conducting qualitative research.

4.6.3.1 *In-depth semi-structured interviews*

The method of investigation for this study was in-depth semi-structured interviewing, which uses verbal interchanges whereby one person, the interviewer, asks the participants questions in an attempt to elicit information about the research area. Although semi-structured interviews tend to involve using predetermined questions, they usually proceed in a conversational manner, offering participants the opportunity to discuss topics they feel are important.

This type of qualitative interview is widely used across disciplines as a primary research method (Roulston & Choi, 2018). It can be used for individual or group settings, and flexibility of its structure can be varied based on the study aims and research question (Kelly, 2010). Semi-structured interviews are advantageous over structured interviews as they "provide greater breadth and depth of information, the opportunity to discover the respondent's experience and interpretation of reality, and access people's ideas, thoughts, and memories in their own words" (Blee & Taylor, 2002, p.92-93). Semi-structured interviews involve a certain amount of previous study in the research topic area (Kelly, 2010) because the interview questions are founded on previous knowledge.

A semi-structured interview guide consists of two types of questions: main themes and follow up questions (Kallio et al., 2016). The interview schedule was supplemented by probes and

follow-up questions in situations where it was desirable for participants to expand on their answers. The development of the interview topic guide and schedule occurred over a three-month period. Previous literature reviews combined with other existing literature and the findings from Chapters 2, 3, 4 and 5 were used to draft a protocol. The final interview schedule was partly structured and partly unstructured in order to provide flexibility and allow for participants to answer in as much detail as required.

The areas of discussion outlined in the interview schedule included: previous experience with all gambling types, current sports betting behaviour, use of online sports betting features (e.g., in-play betting and cash out), opinions and attitudes towards sports betting advertising and promotions, and responsible gambling. Probes were used (when necessary) in order to generate further information from participants. The order of the questions was not fixed and changed depending on the direction that the interview took. Additional questions were asked, some of which may not have been anticipated at the start of the interview, as new issues arose.

In this study, both telephone and face-to-face interviews were used to gather data from participants. Qualitative researchers typically employ face-to-face interviewing techniques when conducting in-depth and semi-structured interviews (Sturges & Hanrahan, 2004). Traditionalists have argued that the absence of visual cues affects the researcher's ability to create and maintain report during the interview (Shuy, 2003). However, it has been argued that telephone interviews are an equally viable option to face-to-face interviewing (Cachia & Millward, 2011; Sturges & Hanrahan, 2004). They may provide an opportunity to collect data from groups who are otherwise difficult to access in person (Sturges & Hanrahan, 2004) and participants who are to be interviewed about sensitive topics may favour the relative anonymity of telephone versus face-to-face communication with the researcher (Sturges & Hanrahan, 2004). Sturges and Hanrahan (2004) argued that the interview modality and telephone medium are complementary, and data collected from these interviews provide rich textual data that can be analysed using an assortment of qualitative data analysis methods.

4.6.3.2 *Method of analysis: Thematic Analysis*

There are numerous approaches to qualitative data collection and analysis, including a diverse range of theoretical, epistemological and disciplinary perspectives (Guest et al., 2012) and the design for qualitative analysis depends on the outcome expected. This can take two forms; exploratory or confirmative analysis. Confirmatory analysis is hypothesis-driven, guided by hypotheses or specific ideas that the researchers want to address. In contrast, there is

exploratory research, which primarily takes on an inductive approach whereby patterns within the data are searched for and are often used to generate hypotheses for future study (Guest et al., 2012).

Thematic analysis, defined as "a method for identifying, analysing and reporting patterns within the data" (Braun & Clarke, 2006, p.78) goes beyond counting explicit words or phrases (as in content analysis) and looks to identify and describe both implicit and explicit concepts within the data, known as the themes (Guest et al. 2012). Thematic analysis can be used to explore lived experiences, perspectives and practices, and the features that influence and shape certain phenomena (Braun & Clarke, 2006).

Some qualitative methods are closely tied to specific theories, whereas thematic analysis allows for flexibility in the researchers' choice of theoretical framework (Braun & Clarke, 2006). As a result, thematic analysis permits a rich, thorough and complex description of data. It is often used in mixed method designs due to this theoretical flexibility, making it a more straightforward option than approaches with certain embedded theoretical assumptions (Creswell et al., 2014). Braun and Clarke (2006) argue that although thematic analysis is relatively easy to conduct, there are some potential issues including if the researcher paraphrases the data without developing an analytic narrative or that the analysis ends up being weak or unconvincing. Therefore, it is important that the themes cohere around a central idea or topic.

There are different ways of approaching thematic analysis. For example, Braun and Clarke (2006) distinguish between inductive and theoretical thematic analysis. An inductive approach is when themes emerge from the data set, whereas with theoretical thematic analysis, themes emerge from the researcher's theoretical stance and may provide an in-depth analysis of some aspect of the data. They differ in terms of the underlying philosophy and procedures for theme development. Researchers must confirm if they are conducting a deductive or inductive thematic analysis as it will inform how themes are theorised (Braun & Clarke, 2006).

Due to the exploratory nature of the interview studies, thematic analysis was chosen. It was also selected as the method of analysis because it was thought to be best able to describe the experiences of the participants. Qualitative research for this thesis was data-driven and inclusive rather than focusing on a specific theoretical analytic area. The analysis was primarily inductive and had a descriptive and exploratory orientation. The studies used research questions, which are more suitable and appropriate for exploratory research. Although this exploratory

approach to the qualitative analysis was not specifically designed to confirm hypotheses, this does not mean that it was atheoretical (Guest et al., 2012) and there was some prior knowledge about the topic areas through conducting the literature review chapters (Chapter 1-3). The findings from this study were used to generate hypotheses for further testing in subsequent chapters of this thesis (Chapters 9 and 10).

Reflexive thematic analysis, the procedure for which has been outlined by Braun and Clarke (2006), was used to guide the analysis for this thesis. The qualitative research was not guided by any *a priori* theoretical framework, therefore an inductive analytic approach was taken. As a result, the themes identified were strongly linked to the data themselves (Patton, 1990). This analysis method was chosen because it is a flexible method that allow for participants' feeling and motivations to be explored (Braun & Clarke, 2006). It is a method that is suitable for preliminary investigation as it acknowledges all themes that are discussed, but focuses on the most prevalent themes, without sacrificing depth of analysis (Gainsbury et al., 2015c).

The purpose of thematic analysis is to identify the meaning of texts by identifying themes and the patterns that underlie them in order to answer the research question being addressed (Braun & Clarke, 2006). Themes are developed through the identification of codes. An important area to address in the coding process is what counts as a pattern or a theme. A theme becomes important when it captures something important relating to the overall research question. Patterns are identified through a process of reading and re-reading the data, coding of the data, and theme development revision (Braun & Clarke, 2006). Please see Chapter 7 for further information about the thematic analysis process.

The objective of the qualitative analysis was to highlight the common perspectives, diversity of opinion between participants, and to report these in a way that positions individual experience into a meaningful context (Gainsbury et al., 2015c). In a similar vein to Gainsbury et al. (2015c), the thematic analysis in Chapters 7 and 8 focused on the factual accounts of participants' experience, rather than attempting to capture the depth of subjective experience. Currently, the extent of the literature on online sports betting features and sports betting marketing perceptions from UK subjects is limited, so the aim was to provide an initial step to understanding individuals' sports betting behaviour. These findings were then used to provide a foundation for the construction of the online survey study. For a detailed account on the process of conducting thematic analysis see Chapter 7.

4.6.4 Study 5 - The online survey

The fifth study of the thesis was the online survey. This was a survey targeted at online sports bettors and was posted on a number of social media sites on the internet. This method was adopted as it takes advantage of the ability to recruit a large sample size via access to large groups and individuals of online sports bettors (see Chapter 9 for a detailed account of the procedure). Predetermined important topics identified in Chapters 5, 6, 7 and 8 were compared and used to inform which sports betting characteristics were deemed the most significant to include in the online survey. These included motivations for gambling, impulsivity, the impact of advertising and promotion uptake, the structural characteristics of sports betting (e.g., in-play betting, 'cash out' and the type of device used). The aim of the survey was to examine the online sports betting behaviour among a sample of international sports bettors.

4.6.4.2 Using the internet for surveys

Online surveys are a powerful research tool and since internet use has grown, so has the popularity of data collection via online surveys (Griffiths et al., 2014b). A large number of researchers have used this particular online methodology to examine different aspects of sports betting behaviours (e.g., Hing et al. 2016a, 2017a, 2017e; Lopez-Gonzalez et al., 2019a).

There are numerous potential advantages of online surveys, compared with traditional paper surveys, which include: i) easier and faster production of the survey using an online programme; (ii) multiple options for sampling and recruitment; (iii) easier and faster recruitment of large samples; (iv) potentially increased response rates; (v) numerous design options; and (vi) improved accuracy and speed of data entry after survey completion (McInroy, 2016).

One major advantage of online surveys is their global reach. It is estimated that just over 50% of the world population has access to the internet either via traditional or mobile devices (Evans & Mathur, 2018), making it convenient for individuals to participate in online research. This global reach therefore enables cross-cultural comparisons. Furthermore, research has shown that individuals across all age groups prefer to complete smartphone or tablet-based surveys, rather than traditional paper surveys (Belisario et al., 2015).

Recruitment can be aided by using the internet to advertise the study; online communities that share a common interest can be targeted for recruitment because they enable researchers to recruit specific target populations through posting in online forums (Maniaci & Rogge, 2014). Maniaci & Rogge (2014) suggest that researchers personalise their message when trying to

recruit participants, including researchers mentioning their place of work or university by name, as this can add relevance and credibility to the project, increasing response rates.

Sills and Song (2002) suggest that for populations that are "connected and technologically savvy", the speed of delivery, cost, ease of response, ease of data cleaning and analysis posit the internet as a favourable delivery method for survey research (p.28). Wood and Griffiths (2007a) suggested a number of benefits when using the internet to conduct research with online gamblers; studies have the potential to reach large audiences quickly and efficiently, and it should be easy to use for these gamblers as they are used to using the internet for online gambling.

In terms of the survey design, making sure that it is user-friendly, easy to navigate, simple and aesthetically pleasing is advisable as it may motivate participation (Oppenheimer et al., 2011). The length of the survey is also important. Oppenheimer et al. (2011) recommend that researchers provide the participant with an estimated completion time, which can help increase response rates. Estimated completion rates for the online survey were provided in the recruitment message and on the study information page. An advantage of online surveys is the ability to include missing question reminders, which may increase the completion rates (Dykema et al., 2013). The study enabled a *Qualtrics* feature, Request Response, which reminded respondents that they had missed a question without requiring that they go back and answer it unless they opted to do so. Participants should be informed about any sensitive questions that may arise (e.g., asking about negative consequences of gambling). Overall, a well-designed survey can help to reduce social desirability and demand effects, leading to increased levels of honesty, and therefore, higher validity from survey responses (Grimm, 2010).

In some cases, online surveys have been found to be associated with lower response rates in comparison to mail-based surveys (Oppenheimer et al., 2011). One method to overcome this is to use reminders, such as email or telephone. As the online survey used social media platforms as the main method of recruitment, reminder messages were posted on individual social media pages one month after the initial invitation was posted. Some research suggests that displaying progress indicators may increase completion rates (Couper et al., 2001). The online survey showed a percentage completion bar to advise respondents of their progress throughout the survey. An additional approach is to offer monetary or nonmonetary incentives, which may increase the completion rate (Mercer et al., 2015), although it may introduce

sampling biases. As an alternative, lottery incentives have more efficacy in improving response rates (Oppenheimer et al., 2011) and were therefore offered in the online survey study.

Bartell and Spyridakis (2012) argue that online and paper survey data collection methods are becoming more comparable in terms of the validity, reliability, and results. However, the two methods for data collection may not be equivalent. For example, it has been reported that online surveys enable improved response rates, such as greater detail when answering qualitative questions (Gunter et al., 2002). Other evidence has suggested that a similar response rate for online and paper surveys can only be found among younger age groups (Kaplowitz et al., 2004). Ultimately, the issue of response rates is debatable, and most likely influenced by external factors such as sample composition and the type of question (Bartell & Spyridakis, 2012). Data collected via online surveys are immediately recorded by the online software platform, potentially allowing for greater measurement of mid-survey attrition. Online surveys can ease the data analysis process through the easy upload of the data to SPSS (easier than manually inputting answers written on paper) and online surveys have the benefits of simultaneously storing entry and thus avoiding possible data entry errors (Maymone et al., 2018).

Web-based recruitment approaches do not provide the survey to participants directly, as with e-mail-based approaches, and researchers must recruit potential participants to take part using various methods. These recruitment procedures carry potential complications, such as rules and restrictions on the platforms (e.g., social media) where advertisements are distributed (Alessi & Martin, 2010). Please see Chapter 9 for further information.

Issues of generalisability, particularly selection bias, may occur when web-based surveys are employed and the results are restricted to those who are keyboard and internet literate. Selection bias occurs when people volunteer for a study who are in some way different from the general population i.e., the non- representative nature of the internet population. For this research, respondents are those individuals who have internet access, visit the social media forum/website and decide to participate in the survey. Therefore, the researcher is not in control of the entire selection process. This has been termed the "volunteer effect" (Friedman et al., 1997). However, it has been argued that online surveys are fitting when potential participants are already confident users of the internet (Wyatt, 2000). Because the population for this thesis are online sports bettors then it is assumed that participants will be representative.

Another issue with online surveys is difficulty in accurately measuring non-response and attrition rates. Potential respondents may ignore invitations to take part, whereas others may

skip questions or exit the survey before answering all of the questions. An issue with participants dropping out of the study is that as the rate of dropout increases, the sample completing the research possibly becomes less representative of the recruited population, which in turn decreases the generalizability of the findings of the study (Hoeger, 2010). As a result, a prize draw was used to incentivize participants and prevent them from leaving the survey before completion. Generally, the use of incentives have been found to increase overall response rates (Pedersen & Nielsen, 2016).

A potential source of bias may arise due to the way that the online survey is structured. When it comes to question type, the question order effects are considered to be important, and previous questions and answers may affect how respondents interpret and answer subsequent sections (Joinson et al., 2008). Joinson et al. (2008) suggest that this is anticipated when the questions are close to each other, in regards to subject area and where they are displayed in the survey. This influence is sometimes called context effects (Schwarz & Strack, 1991) or priming effects (Schwarz & Bless, 1992). However, employing online surveys provides the researcher with more control when designing the format. For example, when all of the questions are displayed on a single page it gives participants the opportunity to simply return to earlier questions to consider the context of the question, and to reconsider associations between questions, and may therefore increase the probability of context effects occurring. One way to reduce this effect is to use page-by-page questions, an approach adopted in this thesis, in order to make the relationships between questions less obvious (Smyth et al., 2007). Please see Chapter 9 for a detailed description of the procedure and method used in the online survey.

4.7 Ethical Issues

4.7.1 *Ethical issues in qualitative research*

Ethical issues are a fundamental part of the research and researchers are faced with ethical challenges throughout the study, from designing to reporting (Sanjari, 2014). When research involves human participants, research projects should rigorously follow ethical considerations. Regardless of the type of qualitative method, the main ethical concern surrounding data collection through interviews is that participants should not be harmed in any way by the research. Ethical issues are often a result of the difficulties of researching private lives and placing accounts in the public arena (Aluwihare-Samaranayake et al., 2012).

There are numerous challenges that have ethical implications for qualitative research. Researchers need to consider all possible ethical issues that could arise during the interview

process, including confidentiality, informed consent, data generation and analysis, researcher/interviewee relationships, and dissemination of findings. Brinkmann and Kvale, (2017) suggest that qualitative researchers should remain open to dilemmas, conflicts and ambivalences that are likely to occur during the research process. This requires going beyond ethical guidelines and principles and focuses more on the ethical capabilities of the researcher (Brinkmann & Kvale, 2017).

The ethical problems that may be present in qualitative research are subtle and different in comparison to those found in quantitative research. For example, potential concerns exist regarding how a researcher approaches recruitment and the effects the research may have on participants (Orb et al., 2001). The relationship and intimacy that is created between the researchers and interviewee in qualitative studies can raise numerous ethical concerns, and qualitative researchers need to be aware of issues such as the establishment of open and honest interactions, avoiding misrepresentations, and respect for privacy (Warusznski, 2002). Participant quotes may be published in public reports and measures must be taken to ensure anonymity. In a quantitative survey, confidentiality is assured by sharing the summary data of survey respondents rather than raw data.

For consent to be valid, it has to be informed and voluntary, and the individual consenting must have the capacity to make the choice. In addition, participants must comprehend what the procedure involves, any potential risks and benefits, and the alternatives to participation. For this research, written informed consent was obtained from all participants prior to their participation in the interviews. One ethical challenge that researchers face is that due to the open and sometimes intimate nature of the interview situation, participants may disclose information that they later come to regret, and there is a risk that in-depth interviews can lead to quasi-therapeutic relationships, that the researcher may not be trained for. Therefore, the researchers should assure the individual that their data will be strictly confidential and anonymous in order to protect participants' rights and to avoid causing them any harm. It should also be emphasised that participation is entirely voluntary, and that they can withdraw at any time. For this thesis, appropriate consent forms were designed, and distributed to the participants to sign. Additionally, an information sheet explaining the nature of the study and the participants' rights was concurrently distributed.

The interviewer and interviewee will often converse about important and often personal topics. It is important that the interviewer creates a rapport by listening attentively and respectively to

the information provided by the participant. As the interview progresses, the interviewer must continue to show respect, encouraging the participant to share their perspective, whilst recognizing the sensitive nature of the conversation (Shank, 2006).

At the outset of the face-to-face and telephone interviews, it was important that the researcher introduced themselves, explained the purpose of the study and what will happen with the interview data. Interviewees were then encouraged to ask questions. These steps were to aid the interviewer in establishing a rapport with the respondent. A trusting researcher-participant relationship may have therapeutic benefits for the participants, but it will also contribute to the richness of the data (Dempsey et al., 2016).

Ethical issues and challenges can sometimes arise when conducting research into sensitive topics. Discussing sports betting with individuals who may be experiencing problems with their gambling could be upsetting or difficult for them. Feelings of guilt, shame, and embarrassment are common with problem gamblers (Lesieur, 1992). It is therefore important that participants are aware that they can stop the interview at any time if they feel uncomfortable.

4.7.2 *Ethical issues with online survey research*

Each and every participant should expect the right to anonymity, confidentiality, privacy, and information consent, and it is the role of the researcher to respect and protect these rights. It is important that the relative ease of online methods does result in complacency in regard to rigorously ethical research (McInroy, 2016).

There has been debates around whether research conducted online is uniquely risky when compared to research conducted offline (Fox et al., 2007). Ess (2007) argues that while offline research offers some ethically relevant advantages, online research provides a unique set of potential benefits and advantages. The potential benefits must be compared to the risks and costs of online research, such as: additional challenges to researchers due to difficulties in procuring informed consent; greater risks to individual privacy and confidentiality due to information online about individuals and their communications; and challenges associated with determining participants' identity due to the use of pseudonyms and the use of multiple online accounts or identities (Ess, 2007).

Formal consent procedures must still be followed in online research, including providing participants with adequate information about the research, and highlighting the procedures designed to ensure anonymity, confidentiality, and privacy. Conducting research online allows

participants to feel decreased inhibitions and increased comfort due to feeling confident that their participation will remain confidential and that they can undertake the questionnaire privately (McDermott & Roen, 2012).

It is important that the handling of data, backup and secure storage, and the privacy of online survey platforms are concerns that are addressed during the research process (McInis, 2016). Any risks and challenges with maintaining data security should be discussed with participants (McInroy, 2016). Online research raises questions about what classifies as identifiable information. For example, online survey platforms offer a unique feature in which internet protocol (IP) addresses could be collected, thus, allowing for geographical tracking of responses. However, this may be seen as identifiable data, and researchers should consider removing IP addresses from the data set or disabling this feature when undertaking data collection (Buchanan & Hvizdak, 2009). Other information, such as email addresses can potentially be used to glean the identity of individual participants. It is therefore important that researchers acknowledge this and assure the participant that the data will be confidential, and the research will employ specific procedures to ensure the confidentiality of the participants' data.

As an online survey was used final part of the research, participants were directed to the information page at the beginning of the questionnaire and then asked to agree that they consent to taking part in the research and for their data being used, prior to starting the survey. Additional relevant resources were made available in order to meet ethical responsibilities. This included resources for topics that could cause the participant distress. For the current thesis, gambling support information for international organisations was provided on the participant information and debrief pages of the online survey. This was to ensure that any participants who dropped out of the survey prior to completion were still able to access the help information.

4.8 Summary of Methods Chapter

The aim of using a multiple-phase sequential mixed methods study was to establish how online sports betting is accessed and used by bettors, the risk factors associated with online sports betting, the salient structural characteristics of online sports betting, and the impact of sports betting advertising. The first study was a scoping review conducted in order to organise and identify the current state of research pertaining to in-play sports betting by identifying peer-reviewed and "grey" literature papers and accessing online sports betting websites. The second

study was a content analysis of gambling operators marketing strategies on Twitter. The findings from both the scoping study and content analysis study were used as secondary data to integrate with conceptual relationships emergent in the qualitative studies. The third and fourth studies were a qualitative exploration of the attitudes and views towards online sports betting which uncovered the motivating factors for engaging in online sports betting, as well as the opinions and attitudes towards sports betting marketing. This was achieved by conducting semi-structured interviews with online sports bettors, and analysing the data using thematic analysis. Findings from this qualitative study then informed the construction of the online questionnaire used in the final study of the thesis.

Chapter 5: In-Play Sports Betting: A Scoping Study

5.1 Introduction

The popularity of online gambling has markedly increased over the past decade, and it has been predicted that it will continue to grow in the coming years (Gray et al., 2012). Sports betting via the use of online platforms has already grown in popularity as a form of gambling in numerous countries around the world (Lopez-Gonzalez & Griffiths, 2018e), and betting with online sports bookmakers comprises 40.31% of the annual online gambling market in Europe (European Gaming & Betting Association, 2017). The value of remote betting (which includes betting online via a personal computer, laptop, tablet, smartphone, television, etc.) has seen a substantial increase in recent years, with football betting and 'in-play' betting being a predominant driver of growth (Lopez-Gonzalez & Griffiths, 2018e).

In-play betting first appeared towards the end of the 1990s when some bookmakers would take bets over the telephone whilst a sports event was in progress, and has now evolved into a popular online service in many countries (Odds Checker, n.d.). For example, in the UK, up to 25% of online gamblers have placed a bet in-play (Gambling Commission, 2016). The online sports betting company Bet365 reported that 80% of all their sports betting revenue is derived from in-play bets alone (Jackson, 2015). The introduction of in-play betting has allowed bookmakers to increase the number of markets available to bet on during sports events, and gamblers are able to place bets based on many different types of in-game activity during the matches. For example, in football matches, it is possible to bet on in-play markets including the match result, half-time score, number of goals scored in the first or second half of the game, the number of yellow cards during the match, and the name of the goal scorers. The availability of a particular sport and in-play markets varies from bookmaker to bookmaker.

As briefly mentioned in Chapter 2, researchers have previously referred to the role of structural characteristics in the acquisition, maintenance, and development of online gambling behaviours (Parke & Griffiths, 2007). Structural characteristics are those features that are inherent within the game itself and include features that are responsible for reinforcement and may in some cases facilitate excessive gambling (Griffiths et al., 2006). These characteristics include, but are not limited to, bet frequency (the number of bets placed within a given time frame), event frequency (the number of gambling events that are available to bet on in a given period), and pay-out frequency (the time between the end of the betting event and receiving the winning payment) (Griffiths & Auer, 2013).

In-play sports betting has structural characteristics that have changed the mechanics of gambling for sports bettors, as they are now able to place a larger number of bets during a single sports game (as opposed to a single bet on who is going to win). It has been argued that structural characteristics of an event, including higher event frequency betting, are associated with problem gambling (Griffiths & Auer, 2013; Harris & Griffiths, 2018). One of the most important differences between being able to place an in-running sports bet opposed to a pre-match bet is that the nature of the market has been turned from what was previously a discontinuous form of gambling into a continuous one (Griffiths, 2012; Griffiths & Auer 2013). The gambling studies literature has suggested that in-play sports betting may offer more of a risk to individuals experiencing gambling problems because it allows the option for high-speed continuous betting and requires rapid and impulsive decisions in the absence of time for reflection (Hing et al., 2016a; Lopez-Gonzalez et al., 2017a, 2019a; Nelson et al., 2008). Furthermore, marketing messages promoting online sports gambling have been become increasingly prevalent to media audiences (Lopez-Gonzalez & Griffiths, 2016).

Sports betting is one of the most commonly promoted forms of gambling in many countries, and access to this marketing activity has been associated with sports betting problems (Hing et al., 2016a; Lopez-Gonzalez et al., 2017b). Advertisements often promote online sports betting as being easily accessible, anywhere at any time, using a mobile or other internet compatible device (Hing et al., 2017b, 2017e; Lopez-Gonzalez et al., 2017a). There has also been a growth in in-play sports betting advertising. For example, within a sample of British and Spanish sports betting advertisements, in-play betting was prevalent in just under half of the adverts (Lopez-Gonzalez et al., 2018a, 2018c, 2018d, 2018f). One popular form of gambling advertising is the promotion of wagering inducements. These are often inducements that are promoted during a live event, and it has been suggested that doing so may promote impulse betting, where those placing a bet have an immediate chance to place the incentivised bet via a platform (Lamont et al., 2016). Inducements promoted during an in-match sporting event have been cited as a practice that may encourage in-play impulse betting intentions (Lamont et al., 2016).

Gambling companies have been known to promote mobile betting over other forms of gambling in their advertisements (Lopez-Gonzalez et al., 2018a, 2018c, 2018d, 2018f) by overstating the illusion of control that gamblers perceive when placing bets via their smartphones (Lopez-Gonzalez et al., 2017b). A main cognitive heuristic involved in the maintenance of gambling behaviour is the illusion of control (Langer, 1975; Griffiths, 1994). The illusion of control generates an expectancy of success that is inappropriately higher than

is objectively warranted (Langer, 1975). In-play sports has the potential to enhance the illusion of control because gamblers are often able to dictate the speed of play, the volume of betting, and amount of money wagered, which may enhance both psychological perception and investments of control over their sports bet placement.

Whilst in-play sports betting features (such as the 'cash out' feature) are increasing in popularity amongst online gambling operators (Lopez-Gonzalez & Griffiths, 2016) and despite the growing body of research investigating the psychosocial and individual psychological factors determining gambling behaviour, much less attention has been devoted to understanding these factors in the context of in-play sports betting and the market characteristics of online sports betting. Therefore, the goal of the present scoping study was to identify what (i) has been published on the topic, (ii) empirical studies have been carried out, and (iii) in-play features are currently available to online sports gamblers via an examination of the world's leading sports betting sites.

5.2 Method

5.2.1 Design and materials

A scoping study was carried out to investigate in-play sports betting. According to Mays et al. (2001), "a scoping study aims to map rapidly the key concepts underpinning a research area and the main sources and types of evidence available, and can be undertaken as stand-alone projects in their own right, especially where an area is complex or has not been reviewed comprehensively before" (p.194). A scoping review differs from traditional literature reviews in that it is a preliminary assessment of the potential size and scope of the available research literature and there is no attempt to control for the quality of the data or where it was obtained (Kavanagh et al., 2005). Scoping reviews also tend to address broader topics where many different study designs might be applicable, rather than focusing on a well-defined research question. They may also include information from non-academic sources (e.g., information available on websites).

The current scoping study was carried out by (i) examining in-play sports betting literature (both academic and the non-academic 'grey' literature) and (ii) accessing and examining information obtained from online gambling websites that feature in-play betting facilities and features. As far as the authors are aware, the present paper is the first to examine availability of literature relating to online in-play sports betting and its specific features on online platforms. The scoping study focused on the following questions: (i) What in-play betting features have

been made available to online sports betting users? (ii) What empirical research has been carried out on in-play sports betting? (iii) What has been theorised or speculated upon concerning in-play betting in the gambling studies literature?

5.3 Procedure

A comprehensive research strategy was adopted that involved searching for evidence from electronic databases: Scopus, Web of Science, PsycARTICLES, PsychINFO PubMED, ProQuest Dissertation and Thesis Global and Google Scholar. To identify any literature related to in-play betting, the following search terms were used: 'In-play [AND] betting', 'Live [AND] action [AND] betting', 'Online [AND] sports [AND] betting', 'In-running [AND] betting', 'In-play [AND] gambling', 'Live [AND] action [AND] gambling', 'Online [AND] sports [AND] gambling', 'In-running [AND] gambling', 'Internet [AND] sports [AND] gambling' and 'internet [AND] sports [AND] betting'. Academic papers and grey literature were examined to identify any information relating to in-play sports betting. The studies were selected if they contained the following criteria: (i) being published in English and (ii) including any information (e.g., theoretical critique) or empirical data pertaining to in-play sports betting. Furthermore, reference lists of retrieved studies were also searched to identify any additional relevant studies. A flow diagram demonstrating this process is shown in Appendix B.

After 'scoping' the literature, a list of any academic papers (both empirical and theoretical) relating to in-play sports betting were identified and are described within the results section. Internet gambling websites were visited to see what features were currently available for in-play sports betting users. A list of 514 online bookmakers that offered online sports betting services was retrieved from the Top 100 Bookmakers (n.d.) website (http://www.top100bookmakers.com/completelist.php). The gambling websites visited were included for review if (i) they offered an online sports betting service, and (ii) it was possible to access the website in English. This resulted in a total of 338 online gambling websites from around the world being visited and reviewed. Those that offered in-play betting services were examined in further detail and are listed in Appendix C (n = 88). Different features from each of the websites were reviewed, including 'help and support areas', 'terms and conditions' and 'promotions'. These were examined to understand what in-play sports betting products, if any, were available for that website. After 'scoping' the websites, a list of in-play sports betting features were coded and are described in the results section and in Appendix C.

5.4 Results and Preliminary Discussion

5.4.1 In-Play Literature

After conducting a systematic literature search, 2047 papers were identified. Once duplicate articles had been removed using Mendeley software and manual searching, 438 papers remained. Of these, 16 papers were identified which included empirical data or theorised about in-play sports betting in the gambling study literature. Thirteen of the papers were empirical, and three of the papers were theoretical and/or commentary based providing some kind of critique of in-play sports betting (see Table 5.1).

5.4.2 Behavioural Tracking Data

Prior to 2006, online gambling studies were predominantly based on self-reported methods and data (Griffiths et al., 2006). Since then, a number of studies have utilised behavioural tracking datasets provided by gaming operators (Griffiths, 2014c). Datasets provided by *bwin* have resulted in a series of empirical contributions regarding actual online gambling behaviour (Braverman & Shaffer, 2010; Braverman et al., 2013; Gray et al., 2012; LaBrie et al., 2007; LaPlante et al., 2008; Nelson et al., 2008; Xuan & Shaffer, 2009). Using a dataset of nearly 47,000 European gamblers, analyses have been conducted using two main approaches: (i) general behaviour descriptions of people who used one particular type of gambling product and (ii) behavioural data pertaining to account closures and the use of online responsible gambling features. In-play sports betting is one form of online gambling which has been examined in relation to its association with problem gambling. The remainder of this section looks at the main findings of these studies.

LaBrie et al. (2007) published the first research on actual gambling behaviour using the *bwin* data sample. This was a longitudinal study of sports gambling behaviour consisting of a sample of 40,499 subscribers, studied over an 8-month period. The aim of the study was to describe Internet gambling behaviour, which was determined by analysing three variables converted to measure gambling involvement: number of daily bets, money bet, and money won. They found that within a sample of online sports bettors, in-play sports bettors (as opposed to those classified as fixed-odds gamblers who placed their bets prior to sports event starting) were more likely to be categorised as heavily involved gamblers (based on number of bets, amount wagered and net losses) when compared to fixed-odds gamblers. One limitation of this study is that this betting behaviour may not have been representative of the participant's total online gambling behaviour (e.g., bettors may play on other online sites or in betting shops). It was

also noted that players other than the account holder may have bet using the online account (LaBrie et al., 2007). Finally, LaBrie et al. (2007) suggest that the progression of activities that lead to pathological gambling may require longer exposure to Internet gambling than the 8 months of gambling that were observed during their study.

LaPlante et al. (2008) reported that within a sample of 47,603 *bwin* subscribers, there was a decline in population participation, number of bets, and size of stakes during an 18- month period. However, this pattern was not seen amongst a sub-group of heavily involved bettors, particularly for in-play sports bettors. Those that placed bets in-play were found to maintain high levels of betting in the period following on from the initial subscription. Several limitations of the study were noted. For example, it was not possible to determine whether the sample utilised other online gambling activities as well as sports betting outside of the *bwin* website. It is possible that the decrease in gambling activity may have been because bettors moved their betting activity to a different gambling service provider. If this was the case, then it is noted that the overall gambling activity would have been underestimated.

5.4.3 Behavioural Markers for At-Risk Gambling

Studies using the *bwin* dataset have also aimed to identify problem gambling in its early stages. When players surpass what is considered a normal level of gambling activity, they may be categorised at risk of developing gambling problems or already engaged in too much gambling. Some research has utilised behavioural tracking data in an attempt to identify such thresholds with the aim of detecting markers for problem gambling at the earliest opportunity.

Braverman and Shaffer (2010) examined whether several gambling characteristics could serve as predictors of future gambling-related problems using a sample of 530 in-play sports bettors who went on to close their accounts due to gambling-related problems after a 1-month period. Four characteristics were considered when gamblers initially started betting: (i) gambling frequency (number of betting days), (ii) gambling intensity (number of bets per day), (iii) gambling trajectory (the tendency to increase or decrease the amount of wagered money) and (iv) gambling variability (the standard deviation of wagers). They found that gamblers who were more likely to close their online betting account due to gambling-related problems initially demonstrated a higher pattern of high frequency, high intensity, and high variability of wager sizes when in-play gambling than the gamblers who did not report gambling-related problems upon closing their account. Although it is not possible to determine why there was a relationship between high wager intensity and variability and gambling-related problems, it

was speculated that external factors (e.g., availability of time, social relationships, or money resources) influence problem gamblers more than 'social gamblers'. Furthermore, the variability in in-play wagers may be indicative of gamblers' desire to stop or to control their impulses (Braverman & Shaffer, 2010). Although this study focused on the behaviour of in-play bettors, it was noted that some participants engaged in very little in-play betting during their first month or during the 2-year gambling period. It is possible that these bettors participated in other gambling activities (e.g., fixed-odds betting) and that these other ways of gambling contributed to account closure (Braverman & Shaffer 2010). Another limitation of this study is that it relies on account closers' self-reported gambling-related problems as an indication of actual gambling-related problems. Subsequently, there is no clinical evidence of the participant experiencing gambling-related problems.

Brosowski et al. (2012) investigated the associations between participation in different gambling types and at-risk gambling. They analysed behavioural data from 27,653 *bwin* subscribers that included the use of eight gambling products by players over a period of 7 months. They found that 60% of gamblers took part in more than one form of gambling and that gambling involvement levels, including gambling on multiple game types, were predictive of gambling-related problems. Engaging in in-play betting or poker were significant predictors of at-risk gambling after controlling for multiple game involvement. One limitation of this study is that data were not collected to confirm whether the participant gambled with any other provider or whether they were the sole user of the account. Secondly, it is not known what marketing interventions were offered by *bwin* around the time of recruitment. Brosowski et al. (2012) suggest that it is possible that a marketing intervention may have artificially increased the sample with bettors only interested in bonus incentives, who then decreased their betting activities after taking advantage of the bonus offers on subscription to the site.

Braverman et al. (2013) carried out a study attempting to identify behavioural markers that can be used to predict the development of gambling-related problems. Approximately half of the 4056 participants had been received what was termed a 'responsible gambling (RG) flag' by *bwin*. Reasons for receiving RG flags included closing their account due to responsible gambling-related problems and/or displaying unusual financial and/or verbal behaviours (e.g., requesting a higher deposit limit). The other half of the sample consisted of subscribers who did not have an RG flag at the time of study. This was the control group (n = 2014), and they were matched by the date of their first deposit. The analysis identified two groups of online gamblers who had a higher risk of developing gambling problems. The first group engaged in

multiple gambling activities and demonstrated a high wager variability on casino games in their first month on using the gambling website. The second group participated in two different gambling types and demonstrated high variability for in-play sports betting. One limitation of this research was the method used to describe betting behaviour. The difference in the number of bets and the stake size between the first and second half of the month were calculated and used this information to categorise the gamblers into one of three groups: stable, increasing, and decreasing. Braverman et al. (2013) suggest that other methods of categorisation may be proven useful in predicting gambling-related problems. Another limitation was that the *bwin* responsible gambling program is used as an indicator of gambling-related problems but has not been evaluated against clinical evaluation (Braverman et al., 2013).

LaPlante et al. (2014) reported that people who bet on in-play sports (as opposed to pre-match betting) were more likely to experience gambling-related problems. In this study, 1440 online surveys were collected from *bwin* subscribers who completed the Brief Biosocial Gambling Screen (BBGS; Gebauer et al., 2010). These data were then analysed alongside online gambling patterns. After controlling for breadth (the number of games an individual plays) and depth (as measured by the number of days spent gambling) of gambling involvement, the study found a relationship between in-play betting and gambling-related problems remained. One limitation of this research was that it utilised an online self-report survey (the BBGS) to assess pathological gambling. An independent clinical validation of the self-reported BBGS assessment was not provided, and the BBGS is a relatively new screen that requires further validation. Therefore, the results were subject to limitations associated with self-report methodology (LaPlante et al., 2014).

Some studies have used the utilisation of online responsible gambling features by players on online gambling platforms to make inferences about online gambling behaviour including in-play betting. Gray et al. (2012) examined 2066 *bwin* subscribers who triggered an automated responsible gambling (RG) alert. Subscribers triggered RG interventions by engaging with *bwin* customer service representatives concerning various responsible gambling tools (e.g., account closure, voluntary self-exclusion, and deposit limits). When gambling behaviour of the *bwin* subscribers was compared to a group of control subscribers, indices of the intensity of gambling activity (e.g., total number of bets made, number of bets per betting day) for in-play sports bettors most differentiated those who had triggered the responsible gambling alert from the control group. A limitation of this particular study was that triggering an RG feature does not serve as a guaranteed indicator that the user has experienced a gambling-related problem

(Gray et al., 2012; Griffiths & Auer, 2016; Nelson et al., 2008). This supports previous research showing that those using responsible gambling tools such as limit-setting (Nelson et al., 2008) are more likely to engage in in-play betting than those who do not use such RG tools. However, if there is an association between engaging in in-play sports betting and problem gambling, the direction remains unclear (Gray et al., 2012). A limitation of using players who set voluntary limits as a population of study is that they may not be representative of all subscribers with problems. Only a small subset of people with gambling-related problems actively seek help for that problem (Slutske, 2006); therefore, the researchers are limited with the conclusions that can be proposed about gambling-related problems from those who do not seek help (Nelson et al., 2008).

Xuan and Shaffer (2009) reported on the behaviour of in-play gamblers using the *bwin* dataset. The gambling behaviour of a sample of 226 *bwin* subscribers who later went on to close their account was compared to a control group of 226 subscribers. In-play wagering patterns were a significant behavioural marker for players who then went on to close their betting account. Those gamblers with account closures demonstrated higher stakes per bet and increased monetary losses but a more conservative betting strategy prior to closing their account. Studies by Braverman and Shaffer (2010) and Xuan and Shaffer (2009) complement the findings of one another in respect to identifying in-play betting behaviours that act as indicators to future gambling-related problems gambling. However, there are limitations for the methodology that was used. Behaviour was only analysed for players who closed their accounts during a select period, a very small proportion of the total *bwin* sample (1.11 and 0.47% respectively). Only in-play betting behaviour was investigated, and it has been noted that it is likely that these gamblers also gamble on other games (e.g., fixed odds betting), and so, other betting activity may have contributed to the closing of the account.

Broda et al. (2008) compared gambling behaviour of those who exceeded deposit limits (i.e., a voluntary limit set on the amount that can be deposited onto an online gambling account) with those who did not within a sample of 46,840 *bwin* subscribers. Their period of analyses was longer than that of Nelson et al. (2008)—a 2-year period as opposed to 18 months. Broda et al. (2008) found that people who received a notification advising them that they had exceeded their deposit limit demonstrated a higher involvement in sports betting (as measured by bets per day and stake size) than players who had not exceeded their deposit limit. However, only a small percentage of players (0.3%) exceeded deposit limits. However, this was the only study that reported no difference in betting behaviour between players who placed fixed-odds bets

and those who placed live action (in-play) bets. However, one major limitation of the study was that although the deposit limit amount that led to issuing a notification message may differ between participants, it was not possible to analyse whether different limits were associated with different effects on gambling behaviour because these data were not available (Broda et al., 2008).

Table 5.1

Academic papers that discuss or empirically studies in-play sports betting (in alphabetical order of first author)

Study/Paper	Methodology	Sample size	Results
Braverman and Shaffer (2010)	Behavioural tracking	530	Live-action bettors who were categorized by high-intensity, frequency and variability of amount staked during their first month of gambling were more likely to report gambling-related problems when closing their accounts.
Braverman et al. (2013)	Behavioural tracking	4,056	Two groups of internet gamblers were found to have a higher risk of developing gambling-related problems. The first group engaged in three of more different gambling activities and showed high wager variability on casino games in their first month of using the gambling website. The second group participated in two different gambling activities and demonstrated high variability for live action wagers.
Broda et al. (2008)	Behavioural tracking	160	Bettors who surpassed a self-imposed or default limit demonstrated a higher involvement in sports betting (i.e., bets per day and stake size). After receiving the notification, indicators of unfavourable gambling behaviours did not decline. There were no reported differences in the betting patterns of results for fixed-odds and live-action betting.
Brosowski, Meyer & Hayer (2008)	Behavioural tracking	27,653	Gambling involvement levels, including gambling on multiple game types, were predictive of gambling-related problems. Engaging in live-action betting or poker were significant predictors of at-risk gambling after controlling for multiple game involvement.
		2,066	

Gray et al. (2012)	Behavioural tracking		Online gamblers who triggered a responsible gambling alert were distinguished from control cases using indices of the intensity of gambling activity (e.g., number of bets per betting day, total number of bets made). Those who triggered the responsible gambling alert were likely to engage in in-play sports betting than those who did not.
Griffiths and Auer (2013)	Theoretical	Not applicable	The paper argued that structural characteristics, including event frequency, appear to be a contributing factor in problem gambling. It was argued that in-play betting had changed the structural characteristics of sports betting from one that was typically discontinuous (e.g., a weekly bet on the outcome of a football game) to a 'continuous' form of gambling with an increased event frequency that is associated with problem gambling.
Hing et al. (2016a)	Self-report	639	The risk of experiencing gambling-related problems was associated with a higher number of bets being placed in-play, before an event has started; and on impulse before or during a match.
Hing et al. (2017c)	Self-report	1,816	Impulsive sports bettors (characterised as having higher trait impulsiveness, more frequent sports betting behaviour, higher problem gambling severity and a shorter history of sports betting) were more likely to bet on in-play sporting events than overall match outcomes.
LaBrie et al (2007)	Behavioural tracking	40,499	Live-action bettors placed on average 2.8 wagers of €4 every fourth day compared with fixed-odds bettors who placed 2.5 bets of €4 every fourth day. Mean net losses were smaller for live-action bets. Those who bet in-play on sports (as opposed to those who bet before matches) were categorized more often as heavily involved gamblers.
LaPlante et al. (2008)	Behavioural tracking	47,603	Most of the sample demonstrated a rapid decrease in the number of bets made and the stake size wagered. Betting frequency was higher for fixed-odds events. However, after three months, the amount wagered on live-action events surpassed wagers placed on fixed-odds events.

LaPlante et al. (2014)	Self-report	1,440	In-play sports betting demonstrated a significant relationship with potential gambling-related problems, after controlling for depth and breadth of gambling involvement.
Lopez-Gonzalez and Griffiths (2017a)	Theoretical	Not applicable	It was theorised that the in-play 'cash-out' feature has structural characteristics that allows bettors to feel more in control of their bets and may make gamblers lose control of their bets.
Lopez-Gonzalez and Griffiths (2019a)	Self-report	659	Problem gambling severity was positively associated with (i) how much gamblers talked about betting with other people prior to bet placement, and (ii) how often online betting functions such as 'cash out' were utilized and time spent betting. In-play sports betting was found to be more prevalent among problem gamblers when compared to moderate-risk gamblers, low-risk gambler and non-problem gamblers.
Nelson et al. (2008)	Behavioural tracking	567	Bettors who utilised a self-limit (SL) feature were more likely to prefer in-play betting on match outcomes opposed to betting on fixed-odds events. Bettors who used the SL feature placed more bets per day but wagered less money per bet on live-action betting than non-SL players. After utilising the SL feature, subscribers reduced gambling activity. However, for sports-betting gamblers. The frequency, amount and percentage-loss of wagers did not change.
Parke and Griffiths (2007)	Theoretical	Not applicable	It was theorised that because of the change in structural characteristics that in-play gambling provided that in-play betting may contribute to problem gambling because of (i) an increase in perceived skill, (ii) within-session chasing on the same match or event, and (iii) by making the sporting events more interesting and/or exciting.
Xuan and Shaffer (2009)	Behavioural tracking	226	Prior to closing their gambling accounts, self-identified in-play betting problem gamblers, whilst experiencing increasing losses, were more likely to try to recoup their losses by increasing their stake per bets on events that had less risky (i.e., shorter) odds. A

decrease in gambling frequency in-play problem bettors was observed prior to account closure.

5.4.4 Self-Reported Gambling Behaviour

A few studies utilising self-report methods have been carried out with the aim of attempting to identify behavioural, psychological and socio-demographic predictors of sports gamblers (including those who bet in-play). Within a sample of 1816 Australian sports gamblers, more impulsive sports gamblers were found to have higher problem gambling severity scores and were more likely to place a higher number of their bets on impulse in-play sports gambling, as opposed to betting on pre-match outcomes (Hing et al., 2017c). However, the authors noted that causal directions were unclear because it may be that placing impulsive in-play bets leads to the development of gambling problems, or conversely, that at-risk and problem gamblers are more likely to place impulse bets in-play. Therefore, in-play betting may be more likely to promote impulsive behaviour, although there is currently no empirical evidence available to support this relationship (Lopez-Gonzalez & Griffiths, 2017a).

Hing et al. (2016a) carried out a study that attempted to identify demographic, behavioural and normative risk factors for gambling problems amongst a sample of 639 Australian sports bettors. Sports bettors who engaged in more than one type of gambling showed higher problem gambling severity (measured using the Problem Gambling Severity Index; Ferris & Wynne, 2001). Higher problem gambling severity was associated with a less planned, more impulsive approach to sports betting, particularly in-play sports betting. People who planned and researched their bets prior to an event were found to have significantly lower PGSI scores than those who did not. Limitations of this study include its use of self-report data that is subject to recall, social desirability and other biases, and that its use of cross-sectional design does not allow for the determination of causality (Hing et al., 2016a).

Lopez-Gonzalez et al. (2019a) explored the association between the use of new structural characteristics of online betting and gambling severity within a sample of 659 Spanish bettors who had bet on sports during the previous 12 months. They examined live in-play betting, the cash out in-play feature, fantasy sports gaming, location of betting and device or platform used to make a bet. In-play betting was reported to be associated with those who were categorised

as problem gamblers. They also reported that those categorised as problem gamblers used the in-play cash out feature more than those who were not. The authors provided several limitations of the study. The first being that it relied on self-report data which can be subject to biases, including memory recall and social desirability. Secondly, the study employed a cross-sectional design, which did not allow for casual implications to be drawn from the results between the four different variables. Finally, there was a chance that out of those who received the survey request, those who demonstrated a greater degree of participation in betting activities were more interested in responding to the survey and resulted in a larger proportion of problem gamblers in the sample (Lopez-Gonzalez & Griffiths, 2019a).

5.4.5 Theoretical Papers on Gambling Behaviour

A number of scholars in the gambling studies field have argued that structural characteristics of gambling, including activities with higher event frequencies, are associated with problem gambling (Griffiths & Auer, 2013; Harris & Griffiths, 2018). In short, those activities that can be gambled on continuously such as slot machines (which can have event frequencies of up to 30 times a minute on an online slot machine) tend to have a much higher association with problem gambling than activities such as a bi-weekly lotto game (with an event frequency of twice a week) (Griffiths & Auer, 2013). In relation to in-play betting, Parke and Griffiths (2007) were the first scholars to speculate that in-play betting may contribute to prolonged, excessive, un-planned, or problem gambling due to (i) a growth in 'perceived skill' (through studying, analysing or spectating the betting event), (ii) chasing losses/winnings on the same or different sporting event by placing further bets during the event and (iii) by making the sporting event more stimulating or exciting.

Papers by Griffiths and Auer (2013) and Lopez-Gonzalez and Griffiths (2017a) made a number of similar observations. Previously, bet duration (the time from placing the bet, until its settlement) was fixed. However, bet durations can now be amended via in-play cash out features (Lopez-Gonzalez & Griffiths 2017a). In-play betting utilising cash out features have the potential to make sports bettors more vulnerable to cognitive bias (Lopez-Gonzalez & Griffiths, 2017a). In the past, sports betting was typically a discontinuous form of gambling with the vast majority of sports bettors gambling weekly on the outcome of a particular event (e.g., a football match). However, some papers have specifically argued that in-play betting and use of the cash out feature now allows sports betting to be a continuous form of gambling (Griffiths & Auer, 2013; Lopez-Gonzalez & Griffiths, 2017a). This has radically changed the

traditional sports betting market which was once a discontinuous (low-risk) gambling activity to a more continuous (high-risk) gambling activity. In-play sports bettors who experience gambling-related problems may feel more inclined to engage in less planned, impulsive, and immediate forms of gambling and the time between bet placement and the reward (or lack of) is greatly shortened (Parke & Griffiths, 2007; Griffiths & Auer, 2013).

A paper published by Lopez-Gonzalez and Griffiths (2017a) is the only paper that explicitly discusses the implication of in-play cash out sports betting features. They suggested that one of the implications of cash out in relation to problem gambling is that there is a conception of gambling on sports as an investment, like that of trading on the stock market. This was then confirmed empirically showing that sports betting advertisements contribute to self-perceptions of bettors as specialists of sports, promoting game analysis to beat gambling companies (Lopez-Gonzalez et al., 2018a, 2018f). The notion that the bettor can view themselves as a professional that can improve their probability of winning may serve as a motivating factor to gamble (Lopez-Gonzalez & Griffiths, 2018a). Problematic online bettors have been found to consider themselves to be semi-professional gamblers, and in the case of horse racing bettors, they are more likely to self-report being a professional gambler (Hing et al., 2016b, 2017a).

There have also been a couple of important position papers in the grey literature concerning in-play betting (see Table 5.2). The Department of Broadband, Communications and Digital Economy in Australia commissioned the Allen Consulting Group (2012) to provide advice on issues relating to in-play betting. At the time the report was produced, it stated that there was no academic literature on the prevalence of the in-play betting in Australia. The report noted that inplay betting had grown in popularity amongst the European betting industry, but this growth is not matched in Australia due to legal betting restrictions. Based on discussion with gambling providers, in Australia, it was reported that the amount of people using an in-play betting service is small, but still part of the gambling market (Australian Interactive Gambling Act 2001).

The UK Gambling Commission (2016) produced a report in order to set out their position in relation to in-play sports betting. Their position is considered in the context of the potential risk that in-play betting may pose to the three licensing objectives set out by the Gambling Act (2005). These are "(a) preventing gambling from being a source of crime or disorder, being associated with crime or disorder or being used to support crime, (b) ensuring that gambling is

conducted in a fair and open way, and (c) protecting children and other vulnerable persons from being harmed or exploited by gambling." (Gambling Act 2005, p. 19). One factor that the Gambling Commission considered was whether this particular gambling activity could be harmful. In 2009, the Gambling Commission previously reported that there was no evidence to suggest that in-play betting posed a greater specific risk of causing gambling-related harm than other forms of online gambling. In the 2016 report, they noted that since 2009, more research has been carried out examining potential associations between in-play betting and gambling-related harm.

The Gambling Commission report (2016) suggested that there could be a greater risk of harm from gambling for those who participate in in-play sports betting compared to those who participate in other forms of gambling. The first example that the Gambling Commission provided was that in-play gambling provides the opportunity to place more frequent bets on the same event, and some research suggests that there is an association between this increased opportunity, or to be 'rewarded' with an increased chance of experiencing gambling problems (Griffiths 2012). Secondly, they cited Australian research from Hing et al. (2016a) demonstrating an association between tendencies to place a higher number of in-play bets with an increased risk of harm from gambling. Finally, they cited figures from a Gambling Prevalence Report (Gambling Commission, 2017) which indicated that 27.4% of online gamblers who bet in-play were classified as problem gamblers, compared to 10.9% of all online gamblers and 5.4% of online gamblers who do not bet in-play. Consequently, it was noted that those who bet in-play are at greater risk of harm from gambling than those who do not bet in-play. The report concluded that based on the evidence review, the UK's current regulatory system of in-play betting was sufficient and that no further controls were required at the time of writing.

Table 5.2

Grey literature papers that discuss in-play sports betting

Author/organization	Title	Country	Methodology	Summary
The Allen Consulting Group (2012)	Research for the review of the Interactive Gambling Act	Australia	Commissioned report	It is not currently legal to place an in-play bet online in Australia and

	2001 Online Gambling and 'In-the-run' betting			no academic research has been published to evaluate in-play sports betting.
Gambling Commission (2016)	In-play (in-running) betting: position paper	United Kingdom	Commissioned report	The report acknowledges that in-play betting may pose some issues relating to: (i) fairness and transparency of the betting (ii) integrity of the betting (iii) risk of harm within the betting medium.

5.4.6 Current In-Play Sports Betting Products

At the time of the present scoping review, three different online in-play betting features are currently being used by online sports bookmakers (cash out, 'Edit my Acca', and 'Edit my Bet'). There are also two other features were identified that at the time of writing were in the process of being introduced and/or developed ('Add 2 Bet' and 'betting using GPS tracking'). These features are described in detail below:

'Cash Out' The first online sports betting provider to offer the option to cash out bets was William Hill in 2012 (Gaming Intelligence 2014). Since the introduction of this in-play product, many European online operators have followed suit and made this product an available feature on their website via a desktop or mobile device. Betfair provided the following description of the in-play cash out feature: "Cash Out lets you take profit early if your bet is coming in, or get some of your stake back if your bet is going against you—all before the event you're betting

on is over. Cash Out offers are made in real time on your current bets, based on live market prices. Whenever you are ready to Cash Out, simply hit the yellow button. Cash out is available on singles and multiples, on a wide range of sports, including football, tennis, horse racing, and many more! You can Cash Out of bets pre-play, in-play, and between legs" (Betfair, n.d.). There are several different types of cash out. Operators such as Bet365 offer the option to 'partially cash out a bet' (the gambler can choose how much of their bet they wish to cash out) and 'auto cash out'—the gambler can select a value and if this value of the bet is reached, then it is automatically cashed out (Bet365, n.da).

Edit My Acca (Accumulator Feature) The second identified in-play betting product that has been introduced to the sports betting market is the 'Edit my ACCA' feature. In May 2016, Ladbrokes introduced this feature to the in-play betting market (Ladbrokes 2017). This feature allows gamblers to remove selections from their accumulator after the bet has been placed and in some instances after the selected event has started. The betting slip is then revised to feature the amended selections and a new potential return amount. This can be done online or via a mobile device (Ladbrokes, 2017).

Edit My Bet Thirdly, 'Edit my bet' is an in-play betting feature that was introduced by Bet365 in January 2017 (Bet365, n.db). The 'edit bet' feature can be used by gamblers to 'unsettle straight accumulators' before matches have started or whilst they are in-play (Bet365 n.db). The feature can also be used to swap single bets for new bets, and the gambler is given a new bet selection valued at Bet365's cash out price to reflect live market/game odds for the original bet.

Add2Bet 'Add2Bet' is one of the latest betting products to be introduced to the betting market, and provided by SBTech (Sayers, 2017). This new live betting feature is aimed at both players and gambling operators. Add2Bet has been described as "a mobile-focused enhancement, designed around simplicity and ease-of use" (Sayers, 2017, p. 1). This new live betting feature allows gamblers the option to instantly use the cash out value of an open bet to create a new bet type—a new double, treble, or acca (accumulator)—by combining it with new selections. It has been advertised as giving players more control over their betting and appeals more effectively to millennials (Sayers, 2017). During initial trials of the feature, (which is yet to go live at the time of writing this scoping review), it was found that those aged under 35 years were early adopters of the feature, "with players from this age group trying Add2Bet after seeing it just twice on average, whereas older users waited until they had viewed it an average

five times" (Sayers, 2017, p. 1). Of the sample included in testing the new feature, it was found that 7% of English Premier League football live bets utilised the Add2Bet to edit an existing live bet. Furthermore, almost 70% of players who used cash out for approximately 40% of their betting activity placed a bet using the new feature.

Betting Using GPS Tracking The final in-play betting feature identified is betting using GPS tracking technology. According to online news stories, UK betting providers are preparing the introduction of in-play horserace betting that includes the use of global positioning system (GPS) technology (Streeter, 2017). Gamblers looking to place a bet on a live horse racing event will be able to view the horse positions within the race (which may have previously been undetermined due to factors such as the speed of the race, or confusion over the distinguishing jerseys worn by the jockeys) using the GPS tracking system. The aim of this is to aid online sports betting customers to make a decision. Gambling operators Paddy Power and Bet365 are already manually offering in-play wagering markets on horse racing markets. However, it has been proposed that this feature will have an average accuracy of the horse's position within 0.1 m, all delivered within a maximum time lag of 0.1 s. The UK racing sports turnover in 2016 generated £5.64b; therefore, it has been predicted that this new feature will increase profits for online gambling companies (Wood, 2017).

5.4.7 In-Play Sports Betting Products on Online Bookmakers' Websites

Of the 513 online sports betting websites reviewed, it was possible to access 338 of these at the time of carrying out the research. Reasons for not being able to access specific bookmaking sites included that the site was (i) no longer active, (ii) not possible to access from the UK due to betting regulations, or (iii) blocked for security reasons.

Of the 338 websites accessed, 88 of these (26%) offered at least one in-play betting feature (see Appendix C). All 88 online gambling websites offered 'full' cash out on selected markets, and 29 of the websites also offered the option of 'partial cash out'. Two websites offered 'auto cash out', where cash out 'rules' can be created with no further input from the bettor. Once a selected value reached, then the bet is automatically cashed out. Website accessibility determined by specific device type was categorised into two groups: (i) desktop (a computer that is suitable for use in one location) and (ii) mobile (a device that can be used on the move such as a smartphone, laptop or tablet). Three gambling websites only allowed cash out to be accessed via a desktop computer or laptop and one website via a mobile device only (e.g., a smartphone device, laptop, or tablet computer). A total of 77 sites offered the cash out facility via desktop

or mobile device, and two sites allowed bets that were placed in a land-based betting shop to then be cashed out via a desktop or mobile device.

In terms of bet types that were able to be cashed out, the most commonly offered amongst those that provided in-play betting was single and accumulator bets (58 websites). An accumulator bet, also known as a multiple or parlay bet, is a single bet that links together more than one bet and is dependent on each individual bet being successful in order to result in an overall winning bet. Eight of the websites only allowed for single bets to be cashed out; one website stated that 'all bet types' could be cashed out, and 22 of the websites viewed did not explicitly state what bet types could be cashed out. In terms of named sports that were eligible for the cash out facility, football (soccer) was the most popular. Three of the sites only offered cash out to football bets, and 23 allowed football bets to be cashed out with a range of other sports available also. A majority of the websites visited that provided in-play betting (n=54) did not explicitly state which sports cash out would be available for. In terms of market eligibility for cash out, for example 'full time result, 'number of goals' and 'both teams to score', 58 websites did not explicitly state which markets were available for cash out, whereas 30 websites did. One sports betting operator (Ladbrokes) operated the in-play betting feature 'Edit my Acca' feature (described in the previous section), and one operator (Bet365) offered the in-play feature 'Edit my Bet' (also described in the previous section).

5.5 General Discussion

The present scoping review is a first attempt to scope the literature and present information on what is known about in-play sports betting. To date, the most commonly used empirical method of investigating in-play gambling behaviours has been via the use of behavioural tracking data (although all of this has come from the same *bwin* dataset to date). Research published using the *bwin* dataset has reported that engaging in in-play gambling appears to be an important marker for gambling-related problems (LaBrie et al., 2007; LaPlante et al., 2008; Nelson et al., 2008). These studies described gambling-related behavioural factors associated with highly involved sports bettors (e.g., number of bets and the total amount wagered) and identified a sub-group of bettors who maintained a high involvement in online gambling via in-play betting (LaBrie et al., 2007; LaPlante et al., 2008). Other studies found that participation in in-play sports betting is an independent predictor of problem gambling severity when gambling involvement is controlled for (Brosowski et al., 2012; Xuan & Shaffer 2009). It was also found that gamblers who utilised an online provider's limit setting tool was more likely to engage in

in-play betting than other forms of gambling (Gray et al., 2012; Nelson et al., 2008). After setting a voluntary limit, those who previously participated in fixed-odds and in-play sports betting were more likely to stop betting in-play than to stop betting on fixed-odds selections (Nelson et al., 2008). Nelson et al. (2008) suggest that this could indicate that the players consider in-play betting to be more of a risk. Overall, the reviewed studies suggest that multiple, frequent and larger in-play bets appeared likely indicators that differentiated high-risk sports bettors from lower risk sports bettors.

Although the results described using the *bwin* dataset allow for real-life gambling behaviour to be studied, they are not without limitations. Firstly, studies that utilise these datasets did not describe the gamblers' perceptions, clinical characteristics or the social consequences associated with their betting behaviour (Griffiths, 2014c; Shaffer et al., 2010). There was no information provided about users' income (Shaffer et al., 2010), and previous research has indicated that the impact of gambling is partially dependent upon the gambler's financial status; therefore, it is necessary to consider the amount spent gambling in relation to the amount of money that is available (Gray et al., 2012). Due to the lack of psychosocial information about the meaning and consequences of gamblers, it is not possible to infer any clinical characteristics regarding the impact of internet gambling on the lives of individual subscribers (Griffiths, 2014c; Shaffer et al., 2010). One disadvantage of using online behavioural tracking is that internet gamblers may also gamble both online and in person, for example, at casinos or other gambling venues, and are unlikely to gamble at just one site (Wardle et al., 2011a). Therefore, estimates of Internet gambling usage may not be an accurate representation of how much Internet subscribers gamble (Shaffer et al., 2010).

In relation to the self-report studies and academic theorising concerning in-play sports betting, researchers have constantly referred to the role of structural characteristics in the acquisition, maintenance and development of online gambling behaviour (Parke & Griffiths, 2007) and have demonstrated an association between problem gambling and such features as event frequency, bet frequency and the speed of rewards (Griffiths, 2012; Harris & Griffiths, 2018). The gambling study literature has suggested that in-play sports betting may offer more of a risk to individuals experiencing gambling problems because it allows the option for high-speed continuous betting and requires rapid and impulsive decisions in absence of time for reflection (Hing et al., 2014a, 2014c, Lopez-Gonzalez et al., 2017a; Nelson et al., 2008). Therefore, in relation to problem gambling, in-play betting offers structural factors that may contribute to the development of gambling-related problems. These characteristics include, but are not

limited to bet frequency, event frequency, event duration, and pay-out frequency. Research has found in-play betting to be associated with people who were categorised as problem gamblers (Lopez-Gonzalez et al., 2019). Lopez-Gonzalez and Griffiths (2019a) offered a potential explanation for this. More specifically, gamblers who are experiencing gambling-related problems may be inclined to place impulsive, less planned and readily available forms of gambling such as in-play. However, using the data from the present studies is not possible to identify a causal link between problem gambling and the use of different gambling types due to the correlational and cross-sectional nature of the few studies that have been carried out to date (Lopez-Gonzalez et al., 2019a).

In relation to the primary data collected by the present authors visiting sports betting websites, the results demonstrated that 26% of online gambling websites offered at least one in-play betting feature. Given that previous empirical research has shown that games that offer a fast, exciting play and regular wins tend to be associated with problem gambling (Parke & Griffiths 2007), it could be that the structural characteristics of in-play betting features such as cash out facilitate problem gambling in vulnerable and susceptible individuals. Empirical research to date indicates that individuals characterised as impulsive sports bettors are more likely to bet on inplay matches than overall outcomes (Hing et al., 2017c). However, further empirical research is required in order to explore whether in-play betting plays a role in excessive or un-planned gambling. The UK Gambling Commission (2016) concluded that those who bet in-play are at greater risk of harm from gambling than those who do not bet in-play, but that no further regulation is currently required in the UK gambling market for in-play betting. It has also been argued that the online aspect of gambling, a new situational as well as structural gambling characteristic of many gambling products, has changed the interaction between gamblers and gambling and may therefore increase the likelihood of gambling-related harm (McCormack & Griffiths 2013). The results of this current scoping study demonstrated that in-play betting features could be accessed via a mobile and desktop device in 87.5% of cases of the sport betting websites visited. This increased accessibility to online gambling platforms and the ease of interaction on platforms such as smartphones may accelerate the acquisition of maladaptive learned behaviours such as problem gambling (James et al., 2017). Again, further empirical research is required to explore whether technological advances and the ease of access to bet in-play increase the likelihood of a person experiencing gambling-related harm.

5.5.1 Limitations

A strength of scoping studies includes rigorous and transparent method of mapping evidence covered in a given field (Davis et al., 2009). However, practical issues relating to time and the fluid nature of the research area being explored must be considered, as well as the issue concerning the 'quality' of data collected (such as the data collected via visiting online gambling websites). With regards to the present study, the scoping study method allowed the possibility of illustrating the field of in-play betting product availability. This was achieved by reviewing many online gambling websites. The research team viewed as many websites available as possible. However, all available gambling websites were not reviewed. In total, 338 out of the 513 gambling websites were visited. This was due mainly due to country legislations which blocked accessibility to multiple online gambling websites.

Only a small number of empirical studies were identified during this scoping review. There was a large reliance on behavioural tracking data which does not explain why people are engaged in such behaviours. Additional limitations of using behaviour tracking research are related to the ethical issues of using gamblers' behaviour data without their awareness, and therefore, there is a lack of informed consent. This scoping study also identified very few self-report studies, and no studies employing other methodologies were identified (e.g., experimental studies, observational studies).

The aim of the present scoping study was to review the contemporary literature empirically investigating or theorising about in-play sports betting and collate information about in-play sports betting features available to gamblers within the online sports betting market. Understanding factors that determine in-play betting behaviour, including understanding the risk factors for problem gambling amongst in-play sports bettors, is an important area of research given the continuing growth of the online sports betting industry. Overall, the research suggests that this way of gambling has the potential to be more harmful than other ways of gambling (e.g., gambling on fixed odds) because of the inherent structural characteristics. However, to date, there has only been one study that explores online sports betting behaviours in the context of specific in-play betting features (i.e., Lopez-Gonzalez & Griffiths, 2019a).

Chapter 6: A Content Analysis of Gambling Operators' Twitter Accounts at the Start of the English Premier League Football Season

6.1 Introduction

Participation in online sports betting in the UK is steadily increasing, and due to changing consumer behaviours and technological advancements, this trend is expected to continue (Gambling Commission, 2018a). Social media use has markedly grown over the past decade, and this is expected to continue (Duggan et al., 2015). One of the most popular social media sites is Twitter, a microblogging platform in which individuals, organizations, and commercial operators share news, information, personal opinion, seek information (Java et al., 2007) and/or meet emotional needs (e.g., Stieglitz & Dang-Xuan 2013). Twitter has over 326 million global monthly active users (Twitter, n.d.), with approximately 13 million users based in the UK (Aslam, 2021) where the present study was carried out. Of these, there are approximately 40% female users and 60% male users. Twitter allows individuals to post short text messages (i.e., 'tweets') to people who have chosen to 'follow' the sender. Followers can actively engage and 'retweet' (i.e., share the post with followers), 'like', and/or 'reply' to posts. Hashtags denote a specific topic for users to participate in or follow the online conversation. More recently (and because of the large potential audience), social media has become an increasingly used marketing platform which many businesses utilize to connect with (and directly market to) current and prospective customers.

Twitter has gained a large following among sports fans (Price et al., 2013). For example, in the 2016 UEFA (Union of European Football Associations) European Championship, more than 14 million tweets were sent in one night when Portugal beat France to win the competition, resulting in 109 million tweets in total relating to the #EURO2016 (Collin, 2016). Twitter is also a popular social media platform used by gambling operators (Gainsbury et al., 2015b). Research has found that 1 in 20 Twitter users in the UK follows at least one account dedicated to producing content promoting gambling (Miller et al., 2016). Additionally, it appears that the number of social media followers of gambling operators is increasing. For example in 2013, Paddy Power, the Irish gambling operator, had over 1.7 million Facebook fans and Twitter followers, half of which were existing customers (Lauchlan, 2013). This has now increased to over 2.1 million followers across the two platforms at the time of writing in March 2019.

Twitter requires that its users are over the age of 13 years. However, there are at least 200,000 children under the age of 12 years who are active monthly users on Twitter (Titcomb, 2018). Additionally, statistics reported from the UK Gambling Commission show that 12% of 11 to 16-year-olds follow one or more gambling operator on social media (i.e., Facebook, Instagram and YouTube) (Gambling Commission, 2018). Of this group, 34% had spent their own money on gambling (in the last week) and were three times more likely to have done so compared to those who did not follow a gambling operator on social media. It is important to note that this research did not include statistics relating to Twitter use by youth. However, in a separate report, Ofcom (2017) reported that 19% of all children aged 12–15 years had accessed Twitter at some point in 2017.

Given the popularity of social media amongst young people, it is conceivable that children and adolescents will be exposed to the online gambling market. Previous research has found that 70% of children in the UK recall seeing a gambling advert on social media (Gambling Commission, 2018b). Similarly, an Australian study of basketball fans aged 11–16 years found that 55% were able to recall seeing a gambling advert on social media (Thomas et al., 2018). These findings have resulted in concerns relating to the (i) exposure of gambling advertising via social media to young people, (ii) volume of gambling advertising, and (iii) normalisation of gambling (Gambling Commission, 2018b).

In relation to gambling advertising regulations on Twitter, the advertising of gambling products within the UK is permitted providing that the gambling operator holds a license from the UK Gambling Commission, the regulatory body formed after the 2005 Gambling Act. Over the years there have been a number of reviews on gambling advertising research (e.g., Binde, 2014; Griffiths, 2005; Newall et al., 2019c; Parke et al., 2015) and it has been noted that gambling marketing is selectively targeted at sports fans, who may find it hard to avoid (Newall et al., 2019c). Another review of gambling advertising noted that there is concern that social media marketing may contribute to an increase in the number of people gambling and possible gambling-related harm (Parke et al., 2015).

The Gambling Commission (2019) reported that Facebook was the most popular social media platform followed by online gamblers (19%), followed by YouTube (9%) and Twitter (8%). Research using Twitter data is relatively novel and there are no established or consistent methods across the few studies that are available. However, a few studies have explored sports betting advertising on social media, including Twitter (e.g., Gainsbury 2015b; Gainsbury et al.,

2016a; Houghton et al., 2019). Gainsbury (2015b) interviewed 19 gambling industry employees in Australia. Results suggested that from a gambling operator perspective, Twitter is the platform for immediate and urgent news concerning gambling. Gambling industry employees claimed that Twitter was a platform that they used to increase their player base by attracting new customers and retaining existing customers. Additionally, it was noted that there was a lack of responsible gambling messages when using the platform by gambling operators.

Gainsbury et al. (2016a) examined the use of social media marketing by both online and land-based Australian gambling operators (n=101). Twitter postings covered a range of topics, including information about the provider, sports news, special promotions and bets, and betting tips. Gambling operators presented gambling content alongside relevant news and events. Further analysis demonstrated numerous latent messages in the body of the social media posts which included (i) a lack of responsible gambling messages, (ii) increasing brand engagement, and (iii) aligning gambling with sport as a way of normalizing gambling.

Houghton et al. (2019) carried out the first quantitative content analysis of UK online gambling operators and gambling affiliate pages (gambling affiliates promote gambling websites, and in return they receive either commission or a percentage of profit). They identified nine content categories which included (i) betting assistance, (ii) direct advertising, (iii) sports content, (iv) customer engagement (tweets that would offer a poll to vote on or a pose a question, prompting a response from followers), (v) humour, (vi) an update of current bet status, (vii) safer gambling, (viii) promotional material and (ix) other. They found that compared to affiliate accounts, the Twitter accounts for the sports gambling operators posted more sports information content and posted more material containing humour. As with previous studies, the authors' noted that there were few responsible gambling messages posted on Twitter.

Surveying an Australian sample (N=964), Gainsbury et al. (2016b) examined the engagement with gambling operators on social media (Facebook, Twitter, and YouTube) and the impact of social media marketing on their gambling behaviour. They found that compared to non-risk gamblers, moderate risk gamblers and problem gamblers were more likely to have actively engaged with gambling operators on these platforms and more likely to report an increase in gambling due to these promotions. However, the data were collected via self-report, so whether these relationships exist in actuality remain to be confirmed.

There have been two notable reports that have investigated gambling operators and their use of social media. In a report commissioned by the Victorian Responsible Gambling Foundation

(Australia), Thomas et al. (2015) researched different social media marketing strategies used by Australian gambling operators and noted that there was a high volume of promotions, which included strategies such as humour and engagement. However, such content may not have been thought of as promotional material by the consumers. Miller et al. (2016) produced a report commissioned the Responsible Gambling Trust (UK). The authors' noted that gambling promotions, tips, and odds on Twitter were included as part of a more extensive discussion concerning sports (e.g., important matches, tactics, and player transfers). Additionally, 25% of tweets sent from gambling operators did not relate to gambling but included updates and humorous content from a range of different sports as well as commentary surrounding different sporting events and matches. The authors suggested that the integration of non-gambling related messages may be a contributing factor in the normalisation of gambling due to it being an element of being a sports fan.

To date, no study has researched individual promotions and promotional strategies marketed by UK gambling operators. Furthermore, no research has examined how gambling operators utilize specific features on Twitter, including the use of hashtags within posted messages. Twitter data, in comparison to data from other social media platforms, such as Facebook, are more openly accessible for researchers to study. Because of this, there has been a recent increase in attention paid to advertising by gambling operators on Twitter (e.g., Tisdall, 2019). Therefore, this platform was chosen over others to allow for the comparison of findings. The present study aimed to provide a snapshot content analysis of social media marketing on Twitter using data collected from the accounts of ten of the largest sports betting operators in the UK and to highlight any implications for regulation of gambling advertising in this digital market. More specifically, this study examined: (i) how gambling operators promote their products on Twitter; (ii) how Twitter features are used by gambling operators, such as the use of hashtags, (iii) how gambling operators interact with their followers, and (iv) implications that the findings may have on the regulation of sports betting advertising via Twitter.

6.2 Method

Data for the study were analysed through a content analysis of the Twitter sites of online gambling operators. Historic pages were accessed using the advanced search feature at twitter.com, allowing the authors to tailor the search results to specific date ranges. Before data collection commencement, a feasibility study was undertaken to assess the volume and nature of tweets produced. The sample for the study was the largest bookmakers (by revenue) in the

UK. These were: Paddy Power, Bet365, William Hill, Coral, Ladbrokes, 888Sport, Betfair, Betfred and Unibet (all of which have an online gambling product). Additionally, a decision was made to include Sky Bet in the sample due to its large number of Twitter followers at the time of the analysis (n=365,133). Paddy Power, William Hill, Coral, Ladbrokes and Betfred also operate high street bookmakers. Paddy Power, Bet365, Sky Bet, William Hill, Coral, Betfair, Betfred and Unibet all offer other online gambling products (e.g., casino and/or poker), but these had separate Twitter pages and were only mentioned when it came to cross-posting from these sports dominated pages.

The present study focused on content posted on August 10–12, 2018, the start of the 2018–2019 English Premier League football [soccer] season (the top level of the English football league system). The English Premier League (EPL) was selected as the time point under study for several reasons. Firstly, the EPL is the most viewed sports league in the world, with the highest exposure of any sporting league. It has a potential television audience of 4.7 billion people (Dubber & Donaldson, 2015) and it is broadcast in over 156 countries (Eurosport, 2015). Secondly, the EPL has a strong brand for producing betting business (Forrest & Simmons, 2003). Betting companies have become a major source of sponsorship for the EPL. For example, the EPL reached a football sponsorship high in the 2016/2017 season, with half of the football teams including a gambling operator (bookmaker or casino) on kit branding (Bunn et al., 2019). Additionally, football betting has the highest grossing gaming yield (£786 million in 2017) by sport for online sports betting and is considered to be the most popular betting activity (Gambling Commission, 2018c). Therefore, it was anticipated that there would be a large volume of Twitter activity taking place at the start of the football season. Consequently, the findings may not generalize to other football leagues or sports.

The present study comprised a retrospective analysis of Twitter of all tweets sent by ten gambling companies between August 10 and August 12 (2018). Data collection took place between December 2018 and January 2019. The study used a directed and inductive approach to develop a coding template to analyse the Twitter posts. Additionally, a summative content analysis of social media promotions on Twitter was conducted (Hsieh & Shannon, 2005). This approach involved the counting and comparisons of keywords, after which the underlying latent meanings were interpreted (Hsieh & Shannon, 2005). Standard screen capture technology was used to take snapshots of Twitter profiles of the sample during the data collection periods. During this process, categories and variables used in previous research of a similar nature (i.e., Thomas et al., 2015) were adapted to suit the characteristics and aims of

the present study. These were utilized when a coding sheet was created. For the present study, five critical areas of investigation were identified. Each theme had a series of different categories which were applied to each gambling operator, and coding frameworks were developed. The topics of inquiry included (i) user engagement, (ii) content of posting, (iii) responsible gambling messages, (iv) use of hashtags and (v) promotional content. These were compared between online-only bookmakers and land-based bookmakers which additionally operate online (to determine whether any differences were present).

More specifically:

- *User engagement* This documented the extent to which users engaged with content on Twitter. The following data were collated: number of followers; number of accounts following; total retweets; total favourites; total polls; total votes; and number of public tweet replies. Retweets can be viewed as a proxy for how many people are engaging with tweets. Having these messages retweeted by followers increases the exposure of the message. The frequencies for each of these categories were counted.
- *Content of posting* The nine content categories identified by Houghton et al. (2019) were applied to the present study, utilizing a deductive approach. These were betting assistance (promoting features that would help people with their betting, included betting tips provided by celebrities and match statistics to help people choose their bets); customer engagement (tweets that would pose a question, or offer a poll, prompting a response from followers); direct advertising (e.g., free bet offers and the provision of pre-match and in-play betting odds); humour (tweets that included a humorous tone when discussing things, such as sporting events); promotional content (sporting information that used relevant promotional hashtags); responsible gambling (responsible gambling messages offered by the operators); sports content (sports updates, sports news, sports reviews and commentary); update of bet status (promoting gambling wins from customers); and other (tweets that did not fit into the other content categories, for example, tweets discussing news stories and celebrity news).
- *Responsible gambling messages* This documented the extent to which responsible gambling messages were evident, either as a standalone message or embedded in other Tweets seemingly aimed at something else. For example, a sports betting offer may include responsible gambling details such as reference to the begambleare.org website (which promotes responsible gambling). This category took an inductive approach, where code categories were drawn directly from the data.

- *Use of hashtags* Hashtag use was measured by counting and categorizing individual hashtags which linked tweets to the wider Twitter audience. An inductive approach was taken to develop a coding scheme for this category.
- *Promotional content* The present study was also interested in examining the specific content of different promotions used by gambling operators, as has been done in previous research (i.e., Thomas et al., 2015). The present study also used an inductive approach to generate categories to be included in the coding framework. The following types identified were: pre-match odds; in-play odds; Twitter exclusive (where promotions are offered exclusively to their Twitter followers); requested odds; 'cash out'; free bet offer (a bonus that is paid in the form of a free bet); mobile app promotion (a promotion that requires the mobile app to be downloaded in order for the person to qualify); loyalty card (part of a consumer incentive scheme which combines points collected in high street bookmakers and online); best odds guaranteed (where an early or fixed odds price is taken for a horse or greyhound race, but the starting price is greater, the bet is paid out at the bigger odds); bet builder (an automated version of manually requesting a sports bet); requested odds (a feature that allows the bettor to request odds); and a cash prize competition.

In terms of coding used for promotion content, in-play betting allows bettors to place a bet on an event once it has started. To distinguish when these odds were promoted via tweets, they were identified as those offered during a sporting event by either stating that the odds are in-play in the body of tweet (e.g., "In-play. Manchester United V Leicester. Anytime Goal scorer-Juan Mata, 9/2" (William Hill, 10th August, 2018), a hashtag referring to in-play betting (e.g., "HT: Wolves 1-1-Everton. Diogo Jota is 7/1 to score next #InPlaywithRay"), or an in-play market is offered (e.g., next goal scorer, next team to score, who will win the next corner?). Pre-match betting refers to bets placed prior to an event starting. These are identified by stating they are pre-match odds or showing odds for an event which has not started yet (which can be identified by the time the tweet is posted vs. the starting time of the event). Requested odds, a feature which allows users to request odds for a particular selection on a chosen event, was identified by hashtags that were relating to that specific gambling company (William Hill- #yourodds, Ladbrokes- #getaprice, Coral- #yourcall, Betfred- #pickyourpunt and Paddy Power- #whatoddspaddy) followed by a link to the betting odds.

An odds request on Twitter is a reply to a request for individual odds that has been requested by a customer, and upon replying, the new market is shared with other customers on the

gambling operator's webpage. Additionally, links to a market of requested odds were also coded as requested odds, for example: "The Premier League is back tonight. Latest #WhatOddsPaddy specials for tonight's Man Utd v Leicester game: pdy. pr/LZnEZo" (Paddy Power, 10 August, 2018). Rejected odds requests were also coded for in this category. For example, if the gambling operator replied to the customer that they would not be able to offer the requested odds. T-tests was carried out to assess whether there was a statistically significant difference between the Twitter postings of online-only bookmakers and land-based bookmakers which additionally operate online. Chi-square tests were then carried out to determine whether there was a significant association between the type of bookmaker and the promotional strategies employed.

6.3 Results

6.3.1 Sample Characteristics

The ten operators included in the sample were: Paddy Power, Bet365, Sky Bet, William Hill, Coral, Ladbrokes, 888Sport, Betfair, Betfred and Unibet (all of which have an online gambling product). Paddy Power, Bet365, Sky Bet, William Hill, Coral, Betfair, Betfred and Unibet all offer other online gambling products (e.g., casino and/or poker), but these had separate Twitter pages and were only mentioned when it came to cross-posting from these sports dominated pages. William Hill, Ladbrokes, Coral, Paddy Power and Betfred also have high street land-based bookmaking shops. A total of 2,527,509 accounts followed sports betting operators on Twitter. It is possible that individual Twitter users followed more than one account (e.g., a user can follow more than one bookmaker). The number of followers of sports betting operators on Twitter ranged from 1540 (Unibet) to 643,499 (Paddy Power).

Many independent samples t-tests were conducted using Bonferroni adjusted alpha levels of .0015 to examine whether there was a statistically significant difference between online bookmakers and land-based bookmakers that also operated online (Table 6.1). Results showed no significant differences between the two types of bookmaker.

Chi-squared tests were carried out to assess whether the proportion of posts, which included different promotional strategies, content categories, hashtag use. and responsible gambling messages differed significantly between online bookmakers and land-based bookmakers which also operate online. Results showed no significant differences concerning the frequency of posts between the two bookmaker groups.

6.3.2 User Engagement

All operators provided multiple tweets per day during the three-day period, ranging from 33 tweets per day (Betfair) to 398 tweets per day (William Hill) as shown in Table 6.2. The tweets contained multiple forms of content, with over one-third of all tweets featuring a picture (n=1294), and around 3% of tweets included a video (n=128) or graphics interchange format [GIF] (n=120). A GIF within this context typically includes moving images with no sound. The user engagement with tweets varied between operators (see Table 6.3). Tweets were retweeted a total of 27,650 times. Tweets from Paddy Power were the most shared (total of 11,560 which is an average of 42.2 retweets per tweet, while the average across all the operators was 8.2 retweets per tweet). A total of 131,043 posts were 'favourited' in total, with the highest number being favourited on the Paddy Power account (n=67,861). Across all brands, 149,721 votes were made in various polls, an average of 3839 votes per poll. Bet365 had the highest average number of votes per poll (n=9390).

Table 6.1

Comparison of Twitter content between 'land-based and online bookmaker' vs. 'online-only bookmaker'

	Land-based and online bookmaker (n= 5)	Online-only bookmaker (n=5)	Sig.[a]		Land-based and online bookmaker (n= 5)	Online- only bookmaker (n=5)	Sig.[a]
	Mean (SD)	Mean (SD)			Mean (SD)	Mean (SD)	
Different types of content posted							
Betting assistance	5.80 (5.63)	2.80 (2.78)	.32	Customer engagement	333.40 (428.49)	42.20 (72.25)	.17
Direct advertising	78.20 (31.82)	23.00 (22.75)	0.01	Humor	36.20(22.54)	19.60 (19.93)	.25
Other	3.00 (1.87)	.40 (.55)	.02	Promotional	4.20 (2.59)	1.20 (1.30)	.49
Responsible gambling	1.80 (1.79)	3.00 (3.00)	-.77	Sports content	135.40 (72.90)	70.00 (67.54)	.18
Update of bet status	.80 (110)	1.10 (1.60)	.55				
Responsible gambling Twitter postings							
RG post	1.60 (1.52)	3.00 (3.00)	.38	RG message embedded	46.80 (27.45)	4.00 (5.87)	.01
Consumer engagement							
Total retweets	3177.80 (4849.10)	2352.20 (3755.24)	.77	Total favorites	1654.20 (28915.17)	9666.40 (14700.27)	.47

Number of polls	3.60(1.67)	4.20 (4.60)	-.27				
Promotional strategies							
Enhanced odds	23.00 (19.43)	3.00(2.83)	.52	In-play odds	17.40 (10.31)	8.20 (14.53)	.28
Pre-match odds	19.20 (9.94)	3.20(3.96)	.01	Twitter exclusive	2.60 (2.61)	2.20 (3.49)	.84
Requested odds	192.60 (297.20)	0(0)	.19	Tipping	2.20 (2.68)	.80 (1.30)	.33
Cash out	0(0)	.40(.89)	.35	Free bet offer	3.40 (3.29)	1.40 (1.34)	.24
App promo	.60 (1.34)	0(0)	.35	Loyalty card	.80 (1.79)	0 (0)	.35
Best odds guaranteed	1.00 (1.73)	.20 (.45)	.80	Facebook promotion	2.40 (2.51)	0(0)	.07
Bet builder	1.20 (2.68)	1.00 (1.41)	.89	Cash competition	0(0)	.10 (.89)	.35
Hashtag Twitter posts							
Football match	37.00 (48.98)	16.20 (13.57)	.92	National football league	10.20 (19.51)	6.80 (8.44)	.73
Football team name	32.60 (30.29)	15.80 (17.43)	.31	Boost promotion	8.80 (15.87)	2.80 (4.38)	.81
Requested odds	198.60 (310.33)	0(0)	.19				

all 8 degrees of freedom

[a]= Adjustments for multiple comparisons: Bonferroni

6.3.3 Responsible Gambling Messages

Only .68% of the total tweets contained a message solely focused on responsible gambling. Only six operators (Bet365, Sky Bet, William Hill, Coral, Ladbrokes and Betfair) tweeted a responsible gambling message. These messages contained information or advice relating to responsible gambling, for example: "Don't chase your losses—stay in control. Gamble responsibly" (Bet365, August 12, 2018). Alongside this was often a hyperlink which said: "Click here for more information on Responsible Gambling", which would then direct individuals who clicked on it to the gambling operator's responsible gambling support page or an independent gambling help organization. These messages were not embedded with any other content and were standalone messages. Responsible gambling information embedded within other promotions (e.g., free bet offers), was provided by seven of the ten gambling operators (Paddy Power, Bet365, Sky Bet, William Hill, Coral, Ladbrokes and Betfred), accounting for 7.5% of tweets (Table 6.4). Examples of responsible gambling information included a link to

begambleaware.org (an independent charity funded by donations from British gambling operators who fund problem gambling treatment, education, and research in the UK) or a message from The Senet Group (an independent body that promotes responsible gambling practices; e.g., “When the fun stops, STOP”).

Table 6.2

User engagement by sports betting operators on Twitter [Part 1] (August 10–12, 2018)

	Paddy Power (n=274)	Bet365 (n=490)	Sky Bet (n=88)	William Hill (n=1,194)	Coral (n=469)	Ladbrokes (n=648)	888Sport (n=112)	Betfair (n=33)	Betfred (n= 402)	Unibet (n=65)	Total (n=3,375)
Followers	643,499	381,700	365,133	208,433	333,334	197,370	1,540	158,298	106,419	131,783	2,527,509
Following	2,550	365	268	35	12,300	1,299	1,718	1,132	889	1,016	21,572
Total tweets	221,397	341,698	612,322	415,767	288,151	189,309	25,116	117,540	229,764	81,180	2,522,244
Tweets (August 10-12)	274	490	88	1,194	469	648	112	33	402	65	3775
Average tweets per day	91.3	163.3	29.3	398	156.3	216	37.3	11	134	21.7	1,258.20
Images	75	255	53	75	210	264	81	28	223	30	1294
Video	0	15	8	0	27	36	2	2	33	5	128
GIF	13	3	12	4	22	25	14	0	17	10	120

Table 6.3

User engagement by sports betting operators on Twitter [Part 2] (August 10-12, 2018)

	Paddy Power (n=274)	Bet365 (n=490)	Sky Bet (n=88)	William Hill (n=1,194)	Coral (n=469)	Ladbrokes (n=648)	888Sport (n=112)	Betfair (n=33)	Betfred (n= 402)	Unibet (n=65)	Total (n=3,375)
Total # retweets	11,560	8,851	2,345	156	3,204	762	473	0	207	92	27,650
Total favourites	67,861	34,678	11,184	695	9,486	4,079	1,909	15	590	546	131,043
Number of polls	1	11	6	3	4	5	4	0	5	0	39
Total votes	6,064	103,297	12,805	3448	7598	14,990	666	0	853	0	149,721

Table 6.4

Responsible gambling messages by different sports betting operators on Twitter (August 10-12, 2018)

	Paddy Power (n=274)	Bet365 (n=490)	SkyBet (n=88)	William Hill (n=1,194)	Coral (n=469)	Ladbrokes (n=648)	888Sport (n=112)	Betfair (n=33)	BetFred (n= 402)	Unibet (n=65)	Total (n= 3,375)
RG stand-alone)	0	6	6	3	3	2	0	3	0	0	23
RG embedded	2	13	7	39	64	61	0	0	68	0	254

6.3.4 Content of Posting

Sports content was the most commonly posted (n=1027, 26.93%), with Ladbrokes posting the higher amount (n=207) (Table 6.5). For example: "Man Utd XI: De Gea, Darmian, Bailly, Lindelof, Shaw, Fred, Pogba, Andreas, Mata, Sanchez, Rashford" (Bet365, August 10, 2018). Promotional content was the second most common content type posted (n=990; 25.96%). A popular social media strategy was to post promotional content using specific hashtags, for example, to promote specific bet requests. Customer engagement was the third most common content type posted (n=915; 24%). For example, "Will Harry Maguire score against Manchester United?" (Bet365, 10th August, 2018) is an example of a poll in a tweet by Bet365, whereby users may click their preferred options (in this case, voting on whether or not they predict that a football player will score in the specified game). The results are immediately displayed after the vote and they can only vote in a poll once.

Table 6.5

The number of tweets made within each content category by bookmaker (August 10-12, 2018)

	Paddy Power (n=274)	Bet365 (n=490)	Sky Bet (n=88)	William Hill (n=1,194)	Coral (n=469)	Ladbrokes (n=648)	888Sport (n=112)	Betfair (n=33)	BetFred (n= 402)	Unibet (n=65)	Total (n= 3,375)
Betting assistance	15	4	2	0	6	3	0	7	5	1	43
Customer engagement	51	171	12	373	89	112	19	5	79	4	915
Direct advertising	54	63	11	49	70	91	12	9	127	20	506
Humour	68	54	15	6	44	33	13	2	30	14	279
Other	3	0	0	1	2	6	1	0	3	1	17
Promotional content	8	1	3	714	64	168	0	0	30	2	990
Responsible gambling	0	6	6	4	3	2	0	3	0	0	24
Sports content	96	186	42	32	192	207	69	16	150	37	1027
Update of bet status	0	2	6	0	0	2	0	0	2	0	12

6.3.5 The Use of Hashtags and Links with Sport

The following section presents the findings related to the hashtags used within each of the Twitter pages (Table 6.6). In total, 1870 hashtags were used and there could be more than one hashtag per Tweet. Over half of the hashtags came from William Hill (n=743, 52.13%) and were related to odds requested by customers as shown in Table 6.5. In total, five of the ten gambling operators tweeted prices for selections that had been requested. These were often accompanied by individual tweets from gambling operators. William Hill: Your odds (#yourodds, n=743, 52.13%), Ladbrokes: Get a price (#getaprice, n=163, 8.56%), Coral: Your call (#yourcall, n=56, 2.94%), Betfred: Pick your punt (#pickyourpunt, n=25, 1.31%), and Paddy Power: What odds Paddy? (#whatoddspaddy, n=6, 0.35%).

All of the gambling operators in the present study linked their tweets to sporting matches using game-based hashtags. Operators used these hashtags to embed the tweet into existing Twitter feeds about a specific game. The most commonly used type of hashtag was linked to a specific football match (n=263; e.g., #DCFCVLUFC [Derby County Football Club vs. Leeds United Football Club]. Just under half of these tweets (n=121) were tweeted by Betfred. The second most popular type of hashtag linked the tweet to a specific football team or teams (n=242, 13.81%; e.g., #LUFC [Leeds United Football Club]. A total of 594 hashtags (64.08%) related to football in some way (player, competition, team, manager). A national football league was the most commonly mentioned type of competition (n=85), followed by golf (n=60), and then rugby league (n=26).

Table 6.6

Hashtags used by different sports betting operators on Twitter (August 10-12, 2018)

Type of hashtag	Paddy Power (n=274)	Bet365 (n=490)	Sky Bet (n=88)	William Hill (n=1,194)	Coral (n=469)	Ladbrokes (n=648)	888Sport (n=112)	Betfair (n=33)	Betfred (n= 402)	Unibet (n=65)	Total (1,905)
Relating to a specific match or game											
Basketball	0	0	0	0	0	0	1	0	0	0	1
Darts	0	0	0	0	0	0	0	0	1	0	1
Snooker	0	0	0	0	0	0	0	0	2	0	2
UFC	0	0	0	0	0	0	0	1	0	0	1
Cricket	0	2	1	1	3	8	3	0	3	2	23
Horse racing meeting	4	0	0	0	0	2	0	0	0	0	6
Boxing	0	0	0	0	0	0	0	0	1	0	1
Football	16	4	9	10	0	38	28	4	121	33	263
League/competition											
International football	0	0	1	0	0	0	0	0	0	0	1
Golf competition	0	3	5	8	15	22	1	1	3	2	60
Rugby League	0	0	0	0	0	0	0	0	26	0	26
National football league	0	0	10	3	0	3	0	4	45	20	85
Tennis competition	0	0	0	0	0	3	0	0	2	2	7
Deadline day	0	0	1	0	0	0	0	0	1	0	2
Individual											
Football manager	0	0	0	0	0	0	0	0	1	0	1
Football player	0	0	0	0	0	0	0	0	2	0	2
Football team name	2	5	25	8	25	57	7	0	71	42	242
Golf player	0	0	0	3	0	0	0	0	0	0	3
Cricket team	0	0	0	0	0	0	0	0	0	1	1

Promotional											
Boost promotion	0	0	10	3	0	4	4	0	37	0	58
Responsible gambling	0	0	5	3	3	1	0	3	0	0	15
Requested odds	6	0	0	743	56	163	0	0	25	0	993
Other promo	5	0	3	3	6	20	0	0	10	0	47
In-play	0	26	0	0	0	0	0	0	3	0	29
Best odds Guaranteed	0	0	0	0	0	0	0	0	1	0	1
Other	2	4	0	4	6	5	2	0	10	1	34

6.3.6 Promotional Content

Twitter-based promotions were classified into 13 categories: pre-match odds, in-play odds, Twitter exclusive, tipping, requested odds, cash out, free bet offer, mobile app promotion, loyalty card, best odds guaranteed, bet builder, and a cash prize competition (Table 6.7). Supplying specifically requested odds was the most popular form of promotion (n=963; 67.06%). Betting customers have the option to ask for a specific price for a bet. These odds are then supplied on Twitter by the gambling operator who use a relevant hashtag. The odds are then made accessible on site for the requested (or any other) person who wants to place a bet on that market to access. The second most commonly tweeted promotion was the provision of enhanced or boosted odds (n=130; 9.05%). These were most commonly used by Betfred (n=51), Ladbrokes (n=32) and Coral (n=19). Some tweets promoted increased odds in order to encourage people to bet, for example, a tweet from @Coral which says "HALF-TIME SMART BOOST. Ruben Neves To Score a Brace-8/1 (Was 6/1) (August 11, 2018). The third most common type of promotion on Twitter from the selected operators was the provision of in-play sporting odds information (n=128, 8.91%). For example, some tweets would show the current in-play betting odds for a specific match and there would be a hyperlink to the betting odds, such as "Underway! Salah is 9/4 to score first in play! Bet here≫fal.cn/VSdb" (Betfred, August 12, 2018). This was most commonly used by Betfred (n=35), Bet365 (n=34) and Paddy Power (n=16). Another popular type of odds promotion was encouraging individuals to bet before a match by providing odds before a game started or a league was underway (n=121, 8.42%). This was most commonly used by Betfred (n=30), Ladbrokes (n=26) and Paddy Power (n=21).

Table 6.7

Promotional content by different sports betting operators on Twitter (August 10-12, 2018)

	Paddy Power (n=274)	Bet365 (n=490)	Sky Bet (n=88)	William Hill (n=1,194)	Coral (n=469)	Ladbrokes (n=648)	888Sport (n=112)	Betfair (n=33)	Betfred (n= 402)	Unibet (n=65)	Total (n= 3,375)
Odds boost/enhanced odds	0	0	6	13	19	32	2	6	51	1	130
Pre-match odds	21	8	0	5	14	26	1	0	30	7	112
In-play odds	16	34	0	8	13	15	4	0	35	3	128
Twitter exclusive	0	8	3	3	4	6	0	0	0	0	24
Requested odds	5	0	0	713	56	163	0	0	26	0	963
Tipping	0	3	1	0	6	1	0	0	4	0	15
Cash out	0	0	0	0	0	0	0	2	0	0	2
Free bet offer	6	3	2	0	4	7	0	0	0	2	24
App promo	0	0	0	0	0	3	0	0	0	0	3
Loyalty card (the Grid)	0	0	0	0	0	4	0	0	0	0	4
Best odds guaranteed	0	1	0	0	0	4	0	0	1	0	6
Facebook promo	3	0	0	0	6	3	0	0	0	0	12
Bet builder	0	3	0	0	0	0	0	2	6	0	11
Cash competition	0	0	0	0	0	0	0	0	0	2	2

6.4 Discussion

The present study sought to provide a snapshot content analysis of social media marketing on Twitter among the largest online sports betting operators in the UK. Results show that there was a large number of tweets being posted by gambling operators on Twitter, with one operator (i.e., William Hill) averaging over 390 tweets per day. Multiple hashtags were used which linked the tweets with popular sporting events and emphasized betting promotions. Analysis demonstrated that there was a wide variety of different promotional strategies employed, and that the number of responsible gambling messages were few.

The present study found that the number of responsible gambling messages—either standalone or embedded within the body of a Tweet—concerning something else (typically promotions) were few (8.51%). These findings support previous research which has reported that responsible gambling messages included within online gambling adverts are sparse (Hing et al., 2015c) and not prevalent on Twitter profiles and postings for sports betting operators (Gainsbury et al., 2016a; Houghton et al., 2019).

The findings demonstrated that multiple different promotions were employed and advertised by online sports betting operators. Newall et al. (2019c) suggested that gambling marketing usually fits into one of three categories: (i) brand awareness, (ii) financial incentives, and (iii) odds advertising. Within the present study, the promotion of requested odds, which falls into the category of 'odds advertising', was found to be the most prevalent form of promotion. One theory as to why customers request individual odds is that they could be classified as a "market maven" (Feick & Price, 1987), an individual who conscientiously absorbs and acquires information about numerous products on a continuous basis and due to this knowledge believe they have an influence over other customers (Williams & Slama, 1995). How this may apply to the requesting of sports betting odds is that gambling operators can communicate these odds directly to the influential consumer, and as a result this information is spread with others on their Twitter network, who trust that specific individual's knowledge concerning gambling. This allows the sports betting operator to spread a marketing message at low financial cost. Conversely, offering sports bettors the option to choose further betting options could lead to an overestimation in their ability to predict a sporting outcome, and result in cognitive distortions (Griffiths, 1994) such as the illusion of control (Langer, 1975). The online sports betting operator may benefit from responding to such customer tweet requests. For example, in the airline industry, Huang (2015) found benefits from responding to a Tweet included higher satisfaction than other customer service channels, the individual being more likely to

recommend the operator to a friend or family, and potential for higher revenue if tweeted back quickly.

Another commonly used type of gambling marketing utilized in this study was the advertising of odds, in particular, in-play sports betting odds. Previous research has found that in-play sports betting has the potential to be more dangerous than other mechanisms of sports betting and encourages impulse sports betting (Killick & Griffiths, 2019). Gambling operators use numerous types of promotion. For example, Hing et al. (2015c) identified 15 different types of betting promotion (e.g., mobile betting bonuses, refund/stakeback offers, happy hours, and multi-bet offers). Similarly, the present study identified promotions such as free bet offers, including 'money back' offers (which returned the stake as a free bet if the bet was a losing bet), 'cash out' and matched bet offers (which match/partially match the stake or deposit with bonus bets). These promotions may contribute to gamblers thinking they are less likely to lose and that they are receiving greater value for money, therefore, diminishing concerns that sports bettors may lose their money and contribute to a reduction in perceived risk that is usually associated with gambling. (Thomas et al., 2015).

The findings compliment those of Houghton et al. (2019) who found that the most common type of Twitter posting for online gambling operators was categorized as sports content (39.59%), which included sports news, interviews, and match commentary. It is important to note that there is a crossover between the gambling operators used within this study and by Houghton et al. (2019). However, the present study expanded on the findings by increasing the number of British gambling operators studied from five to ten.

Online sports betting operators often engage and provide content to users at the same time as live sporting moments within the sporting event. The hashtag is often used to draw attention to the sporting event. They can also help in the organization and promotion of tweets, and also designate that a particular tweet is about the same topic as all of the additional tweets using the same hashtag (Zarrella, 2010). A large number of tweets in the present study had game-related hashtags which directly linked the tweets to specific sporting games, which support the findings of Thomas et al. (2015). These tweets were also targeted at sports fans who might be reading commentary about the game on social media (Thomas et al., 2015). Thomas et al. 2015 suggested that doing this may attract people to bet when they had not originally planned to gamble. Therefore, it might be worth systematically investigating the timing and content of promotional messages (Thomas et al., 2015). The present study found that the three most

commonly used hashtags linked to tweets were those containing (i) requested betting odds; (ii) a specific game, and (iii) a specific team.

The gambling operator connects potential betting opportunities to the sporting event by including a sport-themed hashtag as part of that conversational topic. A hashtag linking the tweet to a national football league was the most commonly mentioned type of competition (n=85, 4.46%) which was unsurprising given that the data were collected during the start of the English Premier League football [soccer] season. Previous research found that tweets are more likely to be retweeted if they contain hashtags (Suh et al., 2010). Here, the sports betting operator would be spreading their message to a broader audience and increasing the interactivity of the tweet. Furthermore, a hashtag links the tweet to a specific topic, and therefore with positive associations that are connected to those topics. Research has found that the liking of a stimulus, (e.g., a brand) can increase when a stimulus has been paired with other positive stimuli (De Houwer et al., 2001). The inclusion of such hashtags allows the potential for those under the age of 18 years who are searching Twitter for content on a topic not related to gambling (e.g., a football event), may be exposed to gambling promotions and this may encourage some of them to visit gambling websites.

Previous research by Miller et al. (2016) identified six communities of gambling enthusiasts that formed online. It was reported that the central cluster, 'the main bookmakers cluster', was responsible for over 80% of all retweets to (or mentioning a) gambling account. Three-quarters of this cluster group (75%) were male. Identifying these clusters allows for further understanding of how bettors use Twitter. Although this has not been addressed in the present study, future research could investigate who was responsible for retweets (i.e., individuals or other gambling operators).

The present study also supports the idea of the gambling industry being embedded within sport, which has also been termed the 'gamblifcation of sport' (Lopez-Gonzalez & Griffiths, 2018e). Similarly, alcohol marketing on social media often inserts the word 'alcohol' into the conversations and daily routines of consumers, and as a result normalises alcohol (Nicholls, 2012). The normalisation of products is a tactic that appears to be employed within gambling marketing. This idea is supported by Gainsbury et al. (2016a) who asserted that online gambling operators produce online gambling content alongside sports news and events, and arguably irrelevant content, to normalize gambling in a broader social context.

To date, only one study (i.e., Houghton et al., 2019) has provided an overview of how social media, specifically Twitter, is being utilized by UK sports betting operators, and the content of the messages that are being conveyed to the online Twitter community. The present study builds upon prior work assessing how online sports betting operators use Twitter utilizing content analysis (Gainsbury et al., 2016a; Houghton et al., 2019). A key strength of the present research is that data were analysed across multiple categories, some of which have not been previously explored in the context of UK sports betting marketing, including Twitter promotional strategies and hashtag usage. While some notable findings were made, it is not possible to make definitive conclusions about whether individuals interacting and/or following online sports betting Twitter accounts impacts on their gambling behaviour online and/or offline.

The issue of whether the different promotions posted on Twitter classify as advertising is debatable. If a company promotes ordinary tweets (that is when tweets are paid for by advertisers in order to initiate engagement from existing customers or to reach a larger audience), these will be identified as they will be labelled as "promoted" and are advertising. Similarly, posts such as the direct advertising of betting odds can clearly be identified as advertising. On the other hand, other types of content, such as 'humorous' posts, and whether these classify as advertising is debatable. Many adverts are designed to create a sense of awareness for a brand, rather than directly influencing a betting decision immediately. For example, Paddy Power has created a reputation for engaging people with humorous content, appealing to its audience. As a result, this influences the number of 'likes' and retweets, increasing the brand's Twitter presence. Therefore, if advertising is the process in which an organisation encourages people to engage in betting products or services, including the drawing of attention to the product and building brand awareness, it could be argued that Twitter posts in the present study can be classified as advertising.

6.4.1 Limitations of the present study

The first author developed an initial coding scheme using 50 tweets from each of the ten accounts and applied this coding scheme to the remaining data. The second author reviewed the tweets to make sure that there was agreement. One methodological weakness was that inter-rater reliability was not calculated for inductive analysis which may affect the validity of the findings. Additionally, Twitter was the only social media platform studied, limiting the generalizability of findings to other social media platforms. The data collection for the present

study was centred upon one main sporting competition, therefore, the results are not generalizable to other sports or necessarily the same sport in other countries. A limitation of Twitter data in the present study is that they do not offer information on the effects of tweets on subsequent behaviour. The extent to which Twitter users were exposed to sports betting marketing posts is not known. The traditional self-report survey that assesses excessive gambling behaviour can be time-consuming for researchers and responders, susceptible to biases, and may have a low response rate. Social media arguably offers a real-time, large-scale examination of gambling behaviours and attitudes, with very few restraints. However, because the data were collected retrospectively, it is important to note that tweets remaining may not represent the initial number of tweets posted (e.g., tweets may have been deleted prior to data collection). Whilst the present research provides a snapshot of how gambling products are being marketed on Twitter, this particular study does not shed light on whether these advertisements actually impact gambling behaviour. However, it has been established that advertising is one of a number of environmental factors that may affect gambling behaviour concurrently (Griffiths & Parke, 2003; Parke et al., 2015), which makes it hard to try and ascertain the exact role of social media advertising when it comes to gambling-related harm.

6.5 Conclusions and Future Directions

Based on the findings of the present study, examining the content of posts on Twitter may provide valuable insights into how information about sports betting products are marketed via social media. The results here complement previous research that has shown that numerous marketing strategies are employed, and that responsible gambling messages are infrequent. Sporting hashtags were used by gambling operators to tie in social media posts with key sporting events. Therefore, it will be essential for researchers to examine the content of sports betting advertising tweets, such as frequency of tweeting and the content of tweets. Twitter serves as a platform where gambling operators can market their product in a normalized and positive way. Future research could examine the gambling consumers and their response to the Twitter postings in addition to those of the gambling operators.

New 2018 British regulations require that all broadcasted gambling adverts feature a responsible gambling message or reference to www.begambleaware.org throughout the advertisement. It is further suggested that all gambling content and communication should include their website information (including that on social media), so individuals know where to access information, support, and advice. There needs to be a review of regulatory policy for

advertising gambling products via social media, possibly something to a similar affect. This development of new policy strategies should consider the availability of sports betting advertisements on Twitter that is likely to be accessed by children. One method, as suggested in a report by GambleAware (2019), is to introduce age screening tools before individuals can follow accounts that relate to or promote gambling. Additionally, betting companies and advertisers could better utilize AdTech in order to remove online betting profiles that have a high chance of being shown to a child (GambleAware 2019). Future research could examine particular creative strategies used by social media operators, for example, the use of humour, and how the use of these strategies influence the intentions and attitudes towards gambling from children and other vulnerable and susceptible groups. The present research contributes to the awareness of content posted on social media by gambling operators and provides data for policymakers and decisionmakers with the aim of adopting regulatory frameworks which reduce gambling harm.

Chapter 7: A Thematic Analysis of Sports Bettors' Perceptions of Sports Betting Marketing Strategies in the UK

7.1 Introduction

In recent years, there have been various technological advances and innovation introduced by the gambling industry which has resulted in a number of new online gambling products widely available on mobile devices and via other hardware, which have transformed the way in which individuals interact with gambling products (Gainsbury, 2019; James et al., 2017; Lawn et al., 2020). Research suggests that the rise in the availability and accessibility of opportunities to gamble is associated with increased levels of gambling-related problems, although the impact is moderated by other factors (Reith, 2012). As well as an increase in the type and availability of gambling products, there has been an increase in the frequency of gambling advertisements.

In the United Kingdom (UK), Ipsos MORI (2020) reported that the amount of money spent on gambling advertising had increased from £264,657,325 in 2015 to £328,945,916 in 2018 (a 24% increase) across various media platforms, particularly for lotteries and bookmakers. Given the popularity of sports betting, as well as the large audiences attracted to live sporting events, the broadcast of wagering advertisements appears to have become widespread, especially during televised sporting events (Columb et al., 2020; Hing et al., 2015d; Lole et al., 2019; Lopez-Gonzalez et al., 2017b; Purves et al., 2020). For example, during the 2018 FIFA (soccer) World Cup, betting advertisements were the most prevalent type of advertisements shown, totalling almost 90 min of screen time during the tournament (Duncan et al., 2018). Therefore, the impact of gambling advertisements, particularly those shown during sporting events, is being increasingly recognized as an important area for research, with the aim of minimizing gambling-related harm.

Previous research has reported that viewing sports betting advertising is associated with an increased desire to gamble among low-risk, moderate, and problem gamblers (Hing et al., 2014c, 2015d; Sproston et al., 2015). Qualitative studies have reported an association between sports betting advertising and sports betting–related attitudes. Sports betting advertising seemingly influences gambling attitudes by normalizing sports betting perceptions held by adults (Deans et al., 2017b; Thomas et al., 2012), young people (8–16 years; Djohari et al., 2019), and children (Pitt et al., 2016; Thomas et al., 2016). Additionally, it has been

argued that sports betting advertising prematurely exposes young people to gambling (Djohari et al., 2019; Ipsos MORI, 2020; Thomas et al., 2018).

Research into the type of wagering inducement promotion has found some inducement types to be more popular than others, for example, sports bettors often favour the "risk-free" or reduced risk inducement (Hing et al., 2014a, 2017b, 2019; Lole et al., 2019). Other research has reported that both treatment-seeking sports bettors and general population sports bettors were encouraged to spend more due to advertising, particularly in response to free bet and deposit offers (Hing et al., 2015d). In a sample of Spanish sports bettors undergoing treatment for gambling disorder (n = 43), several promotions including bonuses, enhanced odds, and money back promotions were found to be particularly persuasive forms of marketing techniques used by gambling operators (Lopez-Gonzalez et al., 2020b).

One of the new online sports betting functionalities that has changed the way in which sports bettors interact with betting products is a novel gambling feature called "custom sports bets" (CSBs), which offers bettors the facility to create their own unique bets. By offering the facility for sports bettors to customize their own bets, Lopez-Gonzalez et al. (2019b) argued that the engagement produced through this option, whereby the bettors engaged in the activity of producing the betting slip rather than just waiting for the sporting event to unfold, could facilitate the "illusion of control." However, recent research by Newall et al. (2021b) of online sport/race bettors (n = 789) did not find a significant correlation between the frequency of placement of these types of bets and an illusion-of-control scale. However, CSB use was found to be positively correlated with problem gambling severity, gambling harms, and gambling consumption.

To date, the majority of research investigating the impact of gambling advertising has been carried out in Australia (e.g., Hing et al., 2013, 2014a, b, 2018; Lamont et al., 2016; Russell et al., 2018), while there is still only a limited understanding of this issue in the UK. While there is increasing research examining the content of such advertising, there is little research examining what gamblers themselves think about such advertising, particularly outside of Australia. Further information about how sports betting marketing strategies influence gambling behaviours is required in order to inform suitable policy and regulatory responses to prevent gambling-related harm in the UK. Therefore, the present study qualitatively explored participants' perceptions of gambling advertising. Given the high volume of gambling advertisements displayed during live sporting events, including shirt-sponsorship and pitch-

side hoarding and advertisements for in-play betting odds, the present study sought the opinion of in-play sports bettors. The specific objectives of the present study were to explore participants' opinions and attitudes towards (i) sports betting advertising and (ii) sports betting marketing techniques used by gambling operators.

7.2 Methods

7.2.1 Procedure

Data were collected between August 2018 and January 2019. Participants were interviewed face-to-face at a location of their choice and four interviews were conducted by telephone. To be eligible to participate in the study, individuals were required to have placed at least one in-play sports bet online within 6 months prior to the interview taking place. The reason for this was to ensure that participants were more likely to have been exposed to different forms of gambling advertising and new betting innovations, particularly sponsorship and in-play based betting promotions. Interviews were semi-structured and varied in length between 25 min and 1 hour, with an average of 38 minutes. All interviews were recorded using a digital voice recorder, with informed consent from participants. Participants were asked questions about the self-perceived impact of advertising and gambling promotions on their gambling behaviour (see Appendix D for the full interview schedule).

Participants completed a demographic information sheet and problem gambling behaviour was assessed using the Problem Gambling Severity Index (PGSI; Ferris & Wynne 2001). This self-assessment of gambling behaviour and consequences in the previous 12 months resulted in participants being categorized into one of the following groups based on PGSI score: non-problem gambler (scoring 0), low-risk gambler (scoring 1–2), moderate-risk gambler (3–7), or problem gambling (8 or more). The study's main goal was to explore participants' own accounts of their sports betting behaviours rather than defining these behaviours entirely through a screening "score." Therefore, the PGSI was used in order to indicate the level of gambling that participants were involved in and to explore whether there were any differences in qualitative responses between groups of individuals. The PGSI was used because it was specifically designed for the general population and has been found to be valid in assessing problem gambling severity in a non-clinical context (Holtgraves, 2009). However, the PGSI groupings must be treated with some caution as they cannot be seen to sufficiently explain broader gambling behaviours for the participants. In the present study, two participants scored in the "moderate risk" PGSI group, and also described patterns of excessive sports betting that were not picked up by the PGSI. Furthermore, two participants said they had gambled

infrequently in the previous 12 months and scored in the "moderate risk" PGSI group, and also described themselves as problem gamblers because of a self-perceived previous "addiction" to sports betting.

7.2.2 Participants

Participants were recruited using convenience sampling, advertisements on the authors' university website, and snowball sampling to generate additional participants. Participants were recruited from across the UK including Nottingham, London, Bristol, Birmingham, Derby, York, Leeds, Sheffield, Oxford, and Dundee (see Table 7.1). Ethical approval was granted from the research team's University Ethics Committee prior to the study commencing. In total, 17 of the participants were male. Four were no-risk gamblers, seven were low-risk gamblers, seven were moderate-risk gamblers, and one was a problem gambler. Their ages ranged from 21 to 32 years (mean = 25.5 years; SD = 3.25).

Table 7.1

Basic demographic information of participants (n=19)

Participant	Gender	Age	PGSI score
1	Male	30	7 (moderate)
2	Male	30	2 (low)
3	Male	26	5 (moderate)
4	Female	24	0 (no-risk)
5	Male	25	0 (no-risk)
6	Male	26	5 (moderate)
7	Male	29	2 (low)
8	Male	30	2 (low)
9	Male	24	4 (moderate)
10	Male	25	0 (no risk)
11	Male	30	0 (no-risk)
12	Male	30	1 (low)
13	Male	21	3 (moderate)
14	Male	31	13 (problem gambler)
15	Female	21	4 (moderate)
16	Male	24	2 (low)

17	Male	32	1 (low)
18	Male	26	2 (low)
19	Male	26	5 (moderate)

7.2.3 Data Analyses and Theoretical Approach

Interviews were recorded and all of the content was typed verbatim into Microsoft Word, and analysed using QSR NVivo (Version 12), a qualitative data analysis computer software package. Nobody was offered compensation for participation. A qualitative method was used for the present study because it allows researchers to explore a "complex setting and complex interaction" (Sofaer, 1999, p.1105). A thematic analysis approach was used (Braun & Clarke, 2006) which involved examining the data to identify the common themes, topics, ideas, and patterns of meaning that come up recurrently. Braun and Clarke (2006) suggest that thematic analysis is a useful research tool due to its theoretical freedom and has the ability to deliver a "rich and detailed, yet complex, account of the data" (p.78). This method was chosen because it was thought as being best able to describe the experiences of the participants. The rationale behind the choice of using this specific analytic technique was that it would suit the exploratory nature of the study. The main steps were as follows: (i) familiarizing the data, (ii) generating initial codes, (iii) searching for themes, (iv) reviewing themes, (v) defining and naming themes, and (vi) producing the report. An inductive thematic analysis procedure was adopted, whereby transcripts were read, re-read, and coded line-by-line. Ideas which reappeared across multiple interviews or which represented an important idea related to the research aims were identified as categories. See Appendix E for a list of the codes. As each new category was identified, previous transcripts were re-read for relevant material. The research team met regularly to discuss the emergence of major themes. New prompts and areas for investigation were included in the interview schedule as they emerged. We refined themes and discussed any differences in interpretation until agreement was reached by the authors. Expressions are used to indicate approximate endorsement: "most" (16 or more participants), "many" (10–15 participants), "some" (4–9 participants), and a "few" (three or fewer participants).

7.3 Results

Based on the analysis, the themes that were created were categorized under the broad concepts of (i) temptation to gamble, (ii) promotion characteristics of gambling, and (iii) regulating gambling advertising. Each concept had sub-themes (see Table 7.2).

Table 7.2

List of themes and sub-themes

Theme	*Sub-theme*
Temptation to gamble	Enticement
	Unavoidable
Promotion characteristics of gambling	Attractive odds
	Brand awareness
	Normalisation of betting
Regulating gambling advertising	Responsible gambling messages
	Protecting children
	Industry comparisons

7.3.1 Theme 1: Temptation to Gamble

The two sub-themes for temptation to gamble were (i) enticement and (ii) unavoidable. The first theme concerned participants' perceptions of how particular gambling advertisements encouraged them to place bets. The second theme concerned participants' feelings that the advertisements were inescapable via specific media channels.

Enticement

This first sub-theme of temptation concerned how advertisements encouraged feelings of being attracted to sports betting. For example, many participants described how the advertisements grabbed their attention and *"made them think about betting". In* some cases, this influenced participants enough to place a bet. For example:

> *"If I'm watching a football match and thinking about having a bet and then just the fact that there's an advert coming on advertising it, then obviously it does enter my brain and encourages me to think about it"* (Participant 8)

> *"[Sports betting advertising] puts an idea [to bet] in your head"* (Participant 16)

"It's a huge, huge thing because you're constantly tempted to go and bet, you know, they do kind of sucker you in" (Participant 14)

Unavoidable

The second recurring sub-theme of temptation was the perception that there is an over-saturation of gambling advertising, particularly during live sporting broadcasts, which sports bettors often struggled to "*get away from*" or "*escape*". The frequency and unavoidability of advertisements were viewed negatively by some sports bettors. For example:

"You can't really get away from [gambling advertising]" (Participant 4)

"I can't believe the amount of gambling adverts. Like, you get bombarded by it. Every break in between the sports is 'This is the odds now'" (Participant 1)

"[Gambling advertising is] a bit rammed down your throat" (Participant 7)

Many participants described seeing promotions for sports wagering when they were watching football on television. It was noted that the volume of advertising was higher during football matches in comparison with other sporting events. They were often surprised at how often they saw advertisements and how normalised it had become during this type of sports in particular. For example:

"There's a lot of adverts when the football is on. At half-time, before the second half. It's everywhere" (Participant 18)

"I'm stunned at the amount of adverts to be honest. Football is the main one I watch, so I see that one the most. When I watch UFC [Ultimate Fighting Championship] and stuff there's nowhere near as much" (Participant 1)

In addition to being often shown during football matches, one participant described how sports betting television advertisements were often aligned with nationally popular events, such as large football tournaments and the Grand National horse racing:

"What you tend to see is, around main events, like the Grand National, stuff like that. You get a lot more stuff on TV" (Participant 10)

Although most of the interviews centred around television advertisements, another form of advertising which some participants discussed was advertising on social media. For example:

> *"Promotions are all over my social media. I don't use Twitter that often so I don't see them on Twitter, but I see them on Instagram and Facebook-sponsored ads for gambling"* (Participant 9)

For some, they simply observed the frequency of this type of advertising. However, another participant discussed the intrusiveness of gambling advertising on social media:

> *"I do see Facebook have the new adverts that they put in the middle of videos and I often see William Hill. It's a halfway through, you're watching a video of whatever it is, is the, uh, 10, 15 seconds it pops up and yeah, it's annoying and a bit intrusive. I wish it wasn't there"* (Participant 15)

7.3.2 Theme 2: Promotion Characteristics of Gambling

The three sub-themes concerning promotion characteristics of gambling were (i) attractive odds, (ii) brand awareness, and (iii) normalisation of betting.

Attractive Odds

The first sub-theme of promotion characteristics concerned participants' perceptions of how odds are advertised in a way that attracts them to placing a sports bet. The promotion of betting odds prior to commencement and during half-time breaks of live sporting events was discussed. If odds were considered "*good*" or "*better*" than other gambling providers, some participants described how this motivated them to place a bet. Monetary incentives provided by sporting betting companies are often promoted through various media sources. Participant perceptions of these promotions varied, but promotions which appeared to particularly appeal to sports bettors were new customer welcome offers, enhanced odds (where a bookmaker boosts the usual betting odds of a selection), and customized sports bets. Some participants described how these promotions decreased their feelings of risk in terms of financial loss. For example:

> *"You just think that you're going to win more because the odds are better. It almost feels like it's a guarantee but it's not"* (Participant 2)

Additionally, promotions created the perceptions that the individual had more control over the outcomes and therefore more likely to win. For example, with "request-a-bet" odds, where participants get to choose the exact markets that they want to bet on:

"That's why I like the 'Price It Up' one [a specific name of a request-a-bet offer]. Because you can completely control everything. You can say whether you think there is going to be like yellow cards and corners" (Participant 4)

"Sky Bet does their request a bet thing where people can request a bet online and then people engage with that because they think they're really good odds and they're more likely to bet on them" (Participant 14)

One element of gambling advertisements that attracted many participants to place a bet was the odds incentives that were being advertised by the betting companies, and one specific promotion that was favoured by sports bettors was "enhanced" odds. Participants described their temptation to gamble, through what appears to be a process of decision-making. Participant 9 commented that "*boosted odds*" made him feel like there was more of a likelihood of the bets winning, which participants questioned. This tempting element of promotions from gambling advertisements caused participants a dilemma of whether or not to place a bet. For example:

"It's the boosts that get me. Those price boosts. They're the devil" (Participant 1)

"You may not have been watching the football. You may not have been thinking about betting. And then you're watching the adverts and the adverts come on and it says 'Sergio Agüero to score next was 7/2 and now…you know 9/2' and you think 'that's not bad, you know?'" (Participant 6)

"It will be 'Oh Manchester City are playing Brentford today' and 'we've got great odds' it's 5/1 or whatever with a [maximum] stake of a fiver [£5] and you think 'oh it's guaranteed money'" (Participant 9)

Participants also discussed how the availability and visibility of these adverts attracted them to place a bet. Their exposure to sports betting promotions and sports betting marketing impacted their attitudes towards the sports betting products, and in some cases encouraged them to gamble with less consideration for what they were betting on:

"So, you see what the odds were, and what they are now and then it just clouds your judgement because suddenly you're playing the odds, not what you think will actually happen. Because they're just up there, in yellow and it's like 'here's the boost' and it always sways my bet a bit" (Participant 1)

"It's quite overwhelming the amount of things you can bet on. There's loads. So to have that...I know it's probably, it's probably incorrect, not incorrect…false…false advertising almost. Do they actually increase the odds? I don't know. But because it's in like big 'oh increased odds' shouting and screaming at you, you think 'oh, why not?'" (Participant 16)

However, a few participants were sceptical of these specific offers and did not seem to be impacted by the prices that were marketed by the gambling operators. This suggests that specific types of offers do not prompt individuals to place bets and that sports betting advertising is not an impactful motivator to gamble for everyone.

"I mean they're nice prices. But if I'm watching the game and they say 'so and so is going to score the next goal' and I'm like 'well, no, he's not', I don't care if it's 8 or 9-1, I'm not going to bet on it" (Participant 4)

"I don't really buy into it as much that it is actually a true reflection of what the original odds were. It's very easy to say otherwise but…it definitely draws you to the bet" (Participant 11)

Brand Awareness

The second sub-theme of promotion characteristics concerned brand awareness. When discussing gambling advertisements, some sports bettors described a number of characteristics and promotional strategies that were used by sports betting operators to attract them to place bets. Financial incentives were used to attract sports bettors which included "free bet" promotions. For example:

"Most of them that are on TV are usually adverts about new customer offers. It's usually around a specific event, like a game that's on" (Participant 13)

"I used to bet with William Hill…now the app I use is Bet Victor and I only got into that because I saw an advert they were doing. It was like if you bet the first goal scorer and then the minute of the goal, it's like a ridiculous amount that they win, and you get one free bet every time they do it and me and my sister saw that and she was like 'oh even I'd try that', so I got onto that site and that's how I got onto it" (Participant 4)

Another promotional incentive was welcome offers, which a few participants described as an attribute that contributed to them creating a betting account. Welcome offers also encouraged

some participants to open gambling accounts with more than one gambling operator. Therefore, welcome offers not only encouraged some individuals to start gambling, but also encouraged others to open more than one account which could potentially lead to more intensive gambling. For example:

> *"So you'll register a betting account. And you'll think 'well I've got a bit of an incentive to get with this company. I'll probably get that with other accounts as well and then that might turn into 3 or 4 with welcome bonuses, or whatever, from different companies' but most of the time I think I settle into the one company"* (Participant 3)

Participants described how brands were associated with specific advertising strategies, and described how these strategies distinguished brands from one another. Advertisements for sports betting were found to be memorable and resulted in an increased awareness of gambling products. Participants described marketing strategies associated with particular brands. These included memorable features that allowed them to recall details of the advertisements, including description of specific characters, betting markets, and promotions that were being implemented. For example, the "In-play with Ray" advertisements, with (well-known British actor) Ray Winstone promoting in-play betting for Bet365:

> *"The one that advertises with Ray Winstone, that one springs to mind"* (Participant 8)

> *"They certainly worked with in-play betting because the one that sticks in my head is with Ray. I didn't know his surname, Ray something and it's Bet365 I think. He's a bit of a geezer and he's going 'oh, this is the latest one'. You know, that one sticks in my mind"* (Participant 16)

One participant described how they had more trust in a betting product because it used a sports figure that they admired. In the following example, the participant refers to Liverpool football club manager Jürgen Klopp:

> *"I love him and I just think…even though you think he's just doing it because it's money you think you wouldn't advertise something terrible because Klopp's funny. He wouldn't do that"* (Participant 4)

Some brands created positive feelings and were perceived by bettors as more entertaining than others. For example, Paddy Power was described as sending "*risky*" and "*humorous*" social media marketing messages:

"They use big named faces…so you can remember who they are and which company they are advertising I guess. I think they generally can be amusing…Paddy Power in particular. They don't seem to go for as much on TV advertising but there is some amazing advertising on social media of them doing things like paying out silly bets that haven't actually won. But personally, I think that is quite genius" (Participant 16)

"Paddy Power tend to…I don't know the best way to describe it…not necessarily push the boundaries but they…they advertise and obviously they have adverts but then I know they obviously work because they're the first ones I've gone to talk about…but they're kind of…they're a bit risky, generally" (Participant 6)

One participant described how advertisements presented characters in a positive manner, suggesting that there could be success with gambling and minimizing potential risks. Therefore, the advertisements may influence people to bet by creating a perception that there is a higher chance of winning:

"The ones I've seen they kind of make them look really attractive…like the people they use in the adverts. It's always really happy, well-off type of people. They don't advertise the negatives of it at all. It's more like you're definitely going to win" (Participant 7)

"There's like a Ray Winstone…I think it's Bet365 advert…and yeah it does show like a lavish lifestyle and stuff which isn't true but it does say at the bottom 'gamble responsibly'" (Participant 10)

Normalisation of Betting

The third sub-theme of promotion characteristics concerned normalisation of betting. Many sports bettors commented on how prevalent and acceptable sports betting had become, especially in the context of football betting and that advertising has contributed to the normalisation of gambling. For example, the wide availability of gambling advertisements, including the frequency and type of advertisements, particularly during live football matches, was seen to encourage the idea that sports betting is an activity that was typical for sports fans to take part in and it was heavily connected with the sporting activity. One participant commented on how they were more likely to pay attention to a gambling advertisement when it was on during a football match. The alignment of the advertisement with the sports being viewed resulted in the advert receiving attention from the participant:

> *"I never really pay attention to the adverts when they're just on TV…but you definitely notice them when you're watching sports"* (Participant 10)

Some participants also discussed how gambling had become ingrained within the sport, highlighting how sports betting has become an increasingly normal part of sports fandom. For example:

> *"The football is normally sponsored by a gambling company and then the next advert is a gambling thing, and then they'll be one more gambling advert, and then it's back to the sponsor of the game, and then you're back to the football"* (Participant 1)

> *"They use it to get a bit of publicity if they've got it on their shirts, or on the screens behind them. I think it's just normal for that to happen"* (Participant 13)

The content of some advertisements allowed a few participants to feel more comfortable placing a bet, in part due to the relaxed nature of some adverts. Others commented on how there were also positive qualities in the advertisement that were emphasized. For example, participant 2 described how advertisements were "*relaxed*" and "*light-hearted*" and as a result felt more comfortable placing a bet. Again, this could imply a feeling that there is less involvement of risk:

> *"You just feel like it's OK to put a bet on because it's just a bit of fun. The videos are quite relaxed and light-hearted"* (Participant 2)

7.3.3 Theme 3: Regulating Gambling Advertising

The three sub-themes for regulating gambling advertising were (i) responsible gambling messages, (ii) protecting children, and (iii) industry comparisons. This theme concerned participants' perceptions of and their attitudes towards harm reduction strategies used by the gambling industry.

Responsible Gambling Messages

The first sub-theme of regulating advertising concerned brand awareness. What was evident from the interviews was the belief that online gambling companies were not concerned with protecting consumers from gambling-related harm, especially vulnerable individuals. Opinions centred on the responsible gambling warning messages in gambling advertisements. Despite many television advertisements including a warning message, participants seemed to be somewhat cynical about the usefulness of these. Many participants raised doubts regarding the

efficacy of the warnings and found them mistimed within the advert and not sufficiently long enough in duration. Participants expressed that they did not perceive the responsible gambling warning messages that appears at the end of advertisements to be an effective method of preventing problematic gambling behaviour. For example:

> *"It's only at the end of their adverts that they tell you, which is about two seconds long, you know, 'please gamble responsibly'. And that's it"* (Participant 14)

A few participants suggested that they did not pay attention to the information provided at the end of the advertisements and reported little change in their behaviour because of the messages Often, these messages were shown after the individual had already made the decision to place a bet. For example:

> *"If it's already grabbed you then you're not listening anymore by the time… if they say 'oh we've got this, this, and this offer' we'll put this on for these odds' you're already gone, you're already on it. I feel like it's too late"* (Participant 4)

One participant praised a particular gambling advertisement that displayed a responsible gambling message at the beginning of the advert, rather than at the end. This form of responsible gambling message allows individuals to see the potential harms that could arise from betting prior to deciding whether to bet or not.

> *"They've got Jeff Stelling. He does it and he's stood in front of a big screen where they talk about their betting app. I can't remember exactly what it is but they start with telling you that it should be fun and not be bad, whereas everyone else just ends with 'Gamble Aware'…I remember making a point about it and said to my fella 'that's good', because we know somebody who's got a problem with gambling. I said that's good. All adverts should start with the disclaimer at the start rather than at the end"* (Participant 4)

Protecting Children

The second sub-theme of regulating advertising concerned protecting children. This theme demonstrated the perceptions that adult sports bettors had on how gambling may influence children's gambling behaviour. Some participants raised concerns about the impact gambling advertising has on young people, particularly those who are not legally allowed to gamble. For example:

> *"I think a lot of young impressionable people might be watching football with their parents"* (Participant 9)

Additionally, some participants discussed the intrusiveness of gambling advertising on social networking sites, such as Facebook, Instagram, and Twitter, and that these advertisements may appeal to children. For example:

> *"Underage people can have access to social media. It's almost like drinking in the sense that when you become a teenager you want to do stuff you're not allowed to do…so people seeing things advertised that they can't do will make them want to gamble when they're older which I don't think is a good thing"* (Participant 17)

Some perceived that gambling operators had a responsibility to ensure that young children were not exposed to gambling advertisements, for example:

> *"I think only if you're an experienced gambler, you know what your limits are. You know how much you should gamble and you should know, you know you should gamble responsibly. But for a kid starting out, 18-year-old me and he's gambling online, people generally ignore these responsible betting adverts. What I would say is maybe they don't do enough to protect younger people, more impressionable people and they don't really, they should protect them a bit more"* (Participant 14)

Industry Comparisons

The third sub-theme of regulating advertising concerned industry comparisons. Many of the participants had negative opinions about sports betting advertising appearing during sporting events. Participants perceived that advertising can encourage some individuals to gamble excessively, particularly among individuals already experiencing gambling problems. Some participants did not believe that the current gambling regulations were enough to protect individuals from gambling-related harm. Some participants said that they believed that gambling advertising should be banned completely, similar to that of the tobacco industry, while others made comparisons between restrictions for other products such as alcohol and fast food.

> *"I think eventually it shouldn't be allowed, like going along the lines of cigarettes and tobacco and that…I don't agree with the advertising of any kind of betting really"* (Participant 8)

One participant discussed how they thought that fast food advertising was more detrimental than gambling and alcohol advertising because gambling advertisements are required to include responsible gambling information, whereas they did not believe that there was enough support for people "*with a fast-food addiction*":

> *"I think it comes down to individual impulsivity with gambling. I don't think it's down to advertising. I think it's different to maybe food addictions and stuff. Like, I think fast food advertising and stuff like that is way worse than gambling advertising myself"* (Participant 10)

When asked for opinions on any changes that they thought should be made to gambling advertising regulations, some participants believed that advertising should be removed completely. Others discussed how it was down to each individual to ensure that they gamble responsibly, and not that of the gambling company.

> *"There's a lot of people out there who do have problems with it and having it flaunted in their face is a bit like anyone with an addiction, like alcohol, if it's thrown in your face then you're going to be all over it, aren't you?"* (Participant 17)

Often, individuals described how the gambling companies provide addictive products and encouraged gambling using methods such as promotional offers and advertising, and should therefore be more heavily regulated to protect individuals from experiencing gambling-related harm. Other participants had the opinion that it was not just the gambling companies that needed to be doing more and it was down to the individual to take control of their gambling behaviour.

> *"I don't think that [gambling operators] offer enough support, but then really, is it their responsibility? It's you know like pubs don't have Alcoholics Anonymous in the corner. Like, 'oh here's your aftercare for that'. It's not really their responsibility but I do believe that it's very easy to sink into online gambling. But I don't know, I think that you have to take some personal responsibility"* (Participant 1)

7.4 Discussion

The present study explored UK sports bettors' perceptions of marketing tactics used by the gambling industry, and the ways in which they perceived it to influence sports betting behaviour. Based on the thematic analysis, three broad themes were created (temptation to gamble, promotion characteristics of gambling, and regulating gambling advertising)

comprising of eight sub-themes in total (Table 7.2). One prevalent form of marketing was the advertising of betting odds, particularly in-play odds and boosted odds. Advertisements promoted these incentives to capture the attention of sports bettors and influence sports betting behaviour. It has been previously argued that the advertising of gambling during a sports match encourages impulse bets and that within advertising messages, the betting operators' logos and website addresses are easy to identify which allows gamblers to immediately respond to this marketing message (Milner et al., 2013). Furthermore, previous research has suggested that in-play sports betting has the potential to be more harmful that other forms of betting and may encourage impulse bets, especially among those experiencing gambling problems (Killick & Griffiths, 2019).

Other incentives that were discussed included promotional offers, such as "welcome offer" free bets and "request-a-bet" odds. In the present study, sports betting promotions minimized perceptions of risk and encouraged feelings of control, and participants acknowledged that these promotions influenced their overall gambling intentions. Previous research has reported that promotions may reduce feelings of perceived risk that is usually associated with gambling (Thomas et al., 2015). The "request-a-bet" feature allows bettors to propose specific selections for their sports bet to a gambling operator. Because a request is initiated by the individual, it has been argued that this may result in the internalization of the locus of control (Lopez-Gonzalez et al., 2019b).

Boosted and enhanced odds were another popular form of inducement that attracted low-risk gamblers, moderate-risk gamblers, and problem gamblers to place a bet. Participants were most aware of these promotions during advertisement breaks for televised sporting events and on gambling operator's websites. It was observed that gambling companies used marketing tactics that included highlighting these odds in yellow and positioning them on the front page of online bookmaker websites, in order to grab the gamblers' attention. Previous research has reported that on Twitter, enhanced odds were among the most frequently tweeted forms of promotion (Killick & Griffiths, 2020a). Advertisers generate audience engagement by using technologies to reach customers with highly relevant advertisements based on what they do, while placing advertisements adjacent to contents expected to be visited by target consumers (Wang, 2006). These findings also support the recent evidence that has reported that bonuses, including price-related gambling promotions, have been found to be particularly persuasive for encouraging gambling behaviour for those experiencing gambling-related problems (Lopez-Gonzalez et al., 2020b).

Some participants' betting behaviour was influenced by seeing marketed increases in the returns being offered by the bookmaker, where they were informed that the odds had been increased (e.g., "was 7/1, now 9/1"). Transaction utility theory (Thaler, 1985) proposes that the basic premise of a consumer's behaviour depends not only on the perceived value of the goods and services available relative to their respective prices but also on a comparison of actual prices with reference to other prices such as the regular price. That is, individuals are affected by relative changes from reference price. Additionally, consumers are likely to make impulse purchases based on price or special promotional offers (Park et al., 2012). Therefore, these promotions may be initiating online impulse gambling behaviour. The uptake of wagering inducements has been previously found to predict impulse betting among problem gamblers and frequent sports viewers (Hing et al., 2018) and gambling operators will often advertise recently "improved" or "flash odds," sometimes with a reduced time-frame, which makes the bet appear more urgent (Newall et al., 2019a). The present exploratory study found these promotions appeared to change betting behaviour, but further research is required to examine how such promotions change betting behaviour.

In the present study, sports betting adverts used tactics designed to create an awareness for their brand, which included the use of celebrities in their television advertising and "humorous" social media marketing strategies. Social media marketing was also described as "intrusive" and "annoying," while others voiced concerns about young people being prematurely exposed to these online betting adverts. The popularity of social media combined with the nature of personalized targeted advertising meant that it was often difficult for participants to avoid them. Previous research has reported that consumers feel that personalized targeting poses a threat to one's data privacy (Brinson et al., 2018). Raymen (2019) argued that the underpinning algorithms of social media have resulted in a "technological unconscious" in which sports bettors are faced with their "unconscious desires" and presented with advertisements for betting, therefore making any efforts to stop or reduce gambling increasingly difficult for both non-problem and problem gamblers.

Previous research has found that the saturation of marketing during sports matches and on televised programs influences young men's views that gambling was a regular part of sports (Deans et al., 2017b). It has long been claimed by scholars and anti-gambling lobby groups that the nature of gambling advertising has a "normalizing" effect (Griffiths, 2005). It has also been argued that the promotion of gambling has become a social norm (Parke et al., 2014) and it makes attitudes in society more positive and socially accepting of gambling (Thomas et

al., 2012). Consequently, gambling is portrayed as a normal, enjoyable form of entertainment that is fun and exciting. While there is nothing inherently wrong with these associations, such marketing practices appear to lead to the expectation that the opportunity to gamble should naturally accompany all sporting activities. It is possible that this perception of betting being a normal and arguably inextricable part of sport may influence the uptake of betting (Djohari et al., 2019).

When comparing the study findings across all PGSI groups, all sports bettors were in agreement that there was an over-saturation of sports betting advertising, and this exposure was heavily intertwined with their sports watching. Previous research has suggested that advertising may be especially influential in "impulse" gambling behaviours of problem gamblers (Binde, 2009); the present study suggests that inducements using odds promotions (e.g., request-a-bet, enhanced and boosted odds) may encourage increased urges to gamble for low-risk, moderate, and problem gambler sports bettors. Therefore, regulation is required to restrict the marketing of these particularly persuasive types of promotions.

Sports bettors in the present study were critical of gambling-related risk information that was presented alongside sports betting adverts. It has previously been suggested that responsible gambling messages are likely to be ignored when shown alongside mostly positive portrayals of gambling elsewhere in the advert (Parke et al., 2014). Therefore, Parke et al. (2014) suggest that this information is displayed asynchronously rather than at the same time as the advertisements. Newall et al. (2019d) found that the "When the FUN stops, stop" gambling warning messages (which are presented alongside sports betting advertisements on online gambling operator's websites) did not have a significant effect on gambling behaviour. However, further empirical research is required in order to examine the impact of responsible gambling campaigns on different media sources, for example, television advertisements.

7.4.1 Limitations

The present study has a number of limitations. First, the study recruited sports bettors prior to the implementation of the "whistle-to-whistle" television restrictions. In 2019, the UK gambling industry volunteered to remove advertisements during live sports broadcasts, excluding horse racing. Therefore, the participants may have had a greater level of exposure to advertising and marketing than if the study was replicated now. Consequently, their views, particularly towards the frequency of television advertising, may not be applicable to those who view sports betting now. The use of convenience and snowball sampling techniques in

this study resulted in a high proportion of young male sports bettors. This is not seen to be a major issue because this is a demographic found to regularly engage in sports betting, but future research could still seek to interview more females and or/older participants as these sub-groups may have different perspectives towards sports betting advertising. Furthermore, the present study specifically targeted individuals who had placed at least one in-play sports bet within the past 6 months. For this reason, participants may have had varied levels of engagement with sports betting and although they were assumed to qualify and meet the aims of the study, they were not representative of all online sports bettors or the wider betting population.

Previous research has found gambling advertising to have more of an impact on gambling involvement for problem gamblers when compared with non-problem gamblers (e.g., Gainsbury et al., 2016b; Hanss et al., 2015). The sample of adult sports bettors used in this study consisted of only one problem gambler. It has previously been suggested that it is important to differentiate and understand the impact of numerous forms of advertising on different population subgroups so that educators, researchers, regulators, and legislators can respond accordingly (Binde, 2009). Future research could address this by exploring how responses to gambling advertisements vary between problem gamblers and non-problem gamblers.

7.5 Conclusion

The present study examined the perceived impact of sports betting marketing among a sample of UK sports bettors. To the best of our knowledge, this is the first study to qualitatively examine the perceived impact of gambling marketing among UK sports bettors. The results demonstrated evidence of two distinct types of wagering inducements that were particularly influential on sports betting behaviour (i.e., custom sports bets and enhanced/boosted odds). These inducements were found to have distinct attributes that were attractive to the sports bettor including increased feelings of control and reduced feelings of risk that may encourage in-play sports betting. These advertised products were found to be unavoidable, being frequently offered through the websites of online operators, television advertisements, and social media sites. Although gambling companies have taken a first step by implementing a voluntary "whistle-to-whistle" advertising ban and a ban on "bet-now" advertisements, policymakers need to consider additional harm-reduction strategies that also include these particularly influential types of promotion and the additional channels in which they are marketed.

Chapter 8: Why Do Individuals Engage in In-Play Sports Betting? A Qualitative Interview Study

8.1 Introduction

In recent years there have been many changes in the way that consumers behave and interact with gambling products. There is a continuous stream of technological development and new features being introduced to the gambling market, especially in the UK sports betting market. Mobile technology has been paramount in contributing to the rise in popularity of online sports betting due to the fact that it provides an easy and accessible method of placing sports bets. Traditionally, sports betting took place inside of bookmakers. Now, due to technological change, sports betting can take place online via smartphones, laptops, and tablets in real time and has altered how individuals can place their bets.

In addition, the number of smartphone users has been increasing over the last few years in the UK and over 85% of adults now own a smartphone (Lee & Paul, 2018). According to the UK Gambling Commission, almost 30% of online gamblers are using a mobile device to place their bets, and there has been a 10% increase in mobile usage between 2016 and 2017 (Gambling Commission, 2018a, b, c). Mobile betting allows individuals the capability to bet from almost any location and can also enable individuals to place a range of live bets on different sporting markets. These bets can be made from numerous locations (e.g., work, home, bars, restaurants) with friends or alone.

There has been an increasing conversion of sports betting into an online activity and this increase has been mirrored by a rise in in-play betting. Although it varies from sport to sport, live betting odds are essentially extracted from pre-match odds with (in the case of football) the current score, time remaining, and other elements all combined (e.g., the awarding of red and yellow cards, predicting next team or person to score, correct score, the total number of goals, etc.). Over one-quarter of all online gamblers in the UK have placed a bet in-play, with the largest proportion of those placed by individuals aged 25–34 years (Gambling Commission, 2018a, b, c). In-play betting is largely an online activity. Bet365 (the most profitable online British bookmaker) reported that over three-quarters of their sports betting revenue is derived from in-play betting (Barber, 2018) and that the most popular sport to bet on is football.

As well as increased use of mobile device technology, there has been an escalation in the coverage of live football matches and other sporting fixtures from around the world. This has resulted in an expansion in the online betting market and an increase in the opportunities to bet on these in-play markets. This is set to continue to rise. The English Premier League showed 200 out of 380 of its matches during 2018–2019, 42 more than 2017–2018 as a result of a new UK broadcast deal. These recent deals were the first time a full round of football matches were streamed live in the UK (BBC Sport, 2018). Subsequently, there will be an increase in matches for betting consumers to engage with.

Also of note is the 'cash out' facility that has been introduced alongside the ability to bet in-play. The 'cash out' feature is now offered to sports bettors by many online gambling operators. It enables sports bettors to settle an open bet for a value offered at the time of 'cashing out' (Lopez-Gonzalez & Griffiths, 2017a). This figure is based on the current status of the bet and the statistical likelihood of the bet winning. This figure can also be higher or lower than the initial stake amount.

In recent years, increased attention has been given to researching in-play sports betting. A Gambling Commission (2016) prevalence survey reported that individuals who bet in-play were more likely to be categorized as problem gamblers. A recent scoping study identified 16 academic papers that had referenced in-play sports betting (Killick & Griffiths, 2019) and concluded that in-play sports betting has the potential to be more harmful than more traditional ways of gambling. The review also noted that different research methods had been used to explore this area. One method is the use of behavioural tracking data provided to researchers by online gambling operators. Such research has found that heavily involved gamblers are more likely to bet on in-play events (LaBrie et al., 2007) and that they increased the frequency of the number of in-play bets being placed after a three-month period (LaPlante et al., 2008). Secondly, some researchers have used self-report methodologies and reported an association between in-play sports betting and risk of problem gambling (Hing et al., 2016a; Lopez-Gonzalez et al., 2019a). The review also identified theoretical papers which had discussed the role of the structural characteristics of in-play sports betting. These papers argued that in-play betting had changed traditional sports betting from a discontinuous form of gambling into a more continuous one, and that the increased event frequency of in-play betting would be more likely to have an association with problem gambling than discontinuous (i.e., low event frequency) forms of gambling (Griffiths & Auer, 2013; Lopez-Gonzalez & Griffiths, 2017a).

Two structural characteristics relevant to in-play sports betting and potential problem gambling are bet frequency (the number of bets placed in a particular time frame) and event frequency (how many games/matches are available to bet on in a certain period of time; Griffiths, 2012). It has also been argued that problem gambling is related to the structural characteristics that reinforce and facilitate gambling behaviour once it has started (e.g., bet frequency, event frequency, event duration, and pay-out interval; Griffiths & Auer, 2013). Lopez-Gonzalez and Griffiths (2017a) suggested that the 'cash out' feature might be utilized during a time where emotions run high and the structural characteristics of this feature might facilitate sports bettors to lose control when they are placing their bets.

Lopez-Gonzalez et al. (2019a) carried out a study of 659 Spanish sports bettors and examined the association between structural characteristics of online sports betting and gambling severity. The results demonstrated that sports bettors with high problem gambling scores were more likely to use in-play betting and the 'cash out' feature. More recently, Parke and Parke (2019) carried out in-depth interviews with 19 online problem gamblers. The core theme to emerge was labelled the 'online sports betting loop', which comprised the new structural features of the online sports betting market, and included in-play sports betting, cash out, and instant depositing. They noted that online sports betting offered features that allow gamblers to almost immediately re-engage with the sports betting activity. Some of their participants found it a challenge to maintain their self-control and others admitted chasing their losses. The authors suggested that attention should be directed towards increasing enforced breaks in this type of gambling.

Other studies on in-play sports betting have supported the idea that in-play sports betting may possess a number of features that encourage individuals to bet more, and there could be an association between in-play sports betting and a risk of harm from gambling (Lopez-Gonzalez et al., 2019a; Lopez-Gonzalez et al., 2020c; Parke & Parke, 2019). Lopez-Gonzalez et al. (2020c) reported that within a sample of 659 Spanish sports bettors, those who engaged in in-play sports betting (compared to those who did not) reported significantly greater (1) problem gambling severity, (2) sport watching consumption, (3) consumption of junk food, (4) alcohol consumption when watching sport, and (5) watching sport to escape from everyday preoccupations. They concluded that in-play betting was associated with impulsivity which occurred under circumstances where there was a high level of emotional involvement (i.e., watching live sport and betting on it).

A few studies have attempted to delineate the relationship between in-play sports betting and increased harm amongst individuals experiencing gambling problems. Previous research has found that impulse sports bettors prefer to bet in-play rather than on overall match outcomes (Hing et al., 2018). However, it is believed that trait impulsivity is not a unitary construct, but encompasses four individual traits: sensation seeking, lack of planning, lack of perseverance, and negative urgency (acting impulsively in the context of strong emotions; Sharma et al., 2014). Hing et al. (2018a) suggested that research into contextual factors that contribute to urges to bet impulsively would help the field gain a better understanding of problematic gambling behaviour.

Another explanation that has been provided as to why sports betting may be associated with problem gambling is that betting features within live sporting events such as in-play betting and 'cash out' might make sports bettors more susceptible to experiencing cognitive biases (Lopez-Gonzalez et al, 2017a). Furthermore, technological advancements along with narratives found within sports betting adverts that enhance control could lead to an increase in perceived skill causing bettors to place their wagers more uncontrollably (Lopez-Gonzalez et al., 2018a).

One cognitive heuristic related to gambling behaviour is the illusion of control (Langer, 1975). The illusion of control is the inclination for individuals to overestimate the control they have over the outcome of events. It has been suggested that the illusion of control may be heightened because sports bettors can choose the amount to stake, the number of bets, and the speed in which they place them, which may result in sports bettors overestimating their control over uncountable events (Lopez-Gonzalez et al., 2018a). The availability heuristic refers to the placing of more weight on information that is easier to recall. Information that is easier to recall is judged to be more common (Tversky & Kahneman, 1973) which leads to an overestimation of the probability of similar things happening in the future. Gamblers often utilize heuristics to process information more quickly such as representativeness heuristics. The use of these mental shortcuts could lead to biased decisions and/or distorted perceptions (Griffiths, 1994).

D'Astous and Gaspero (2015) reported that when there is a limited timeframe for bet placement, sports bettors (n = 161) used heuristic processing. Sports bettors were more likely to use heuristic (intuitive and fast) processing, rather than analytic processing (slow and deliberate). This form of processing was found to result in a lower gambling return on investment. Furthermore, this study reported more experienced gamblers were more likely to use analytic processing and their bets were more favourable (D'Astous & Gaspero, 2015). The authors

suggested that these heuristic and analytic processes act as mediators in the relationship between previous experience and betting performance. It has also been argued that features such as in-play betting and "cash-out" betting may result in sports bettors having a higher likelihood of experiencing cognitive biases (Lopez-Gonzalez et al., 2017a) and as a result place less planned bets.

Although the potential impact of emerging online sports betting features has been raised as a possible concern in relation to risk of problem gambling, to date, there has been minimal research carried out on the underlying mechanisms and attitudes towards specific online sports betting features including in-play sports betting and the use of the "cash out" feature. Consequently, the present study explored the opinions towards in-play sports betting behaviours. More specifically, it explored sports bettors' perceived motivation and opinions towards online sports betting features. The specific objectives were to explore participants' opinions and attitudes to: (1) in-play sports betting, and (2) towards the 'cash out' feature use within online sports betting.

8.2 Methods

8.2.1 Participants

Please see Chapter 7.2.2 for a description of participants that took part in the study.

8.2.2 Procedure

Please see Chapter 7.2.1 for a description of the study procedure.

8.2.3 Data Analyses and Theoretical Approach

Please see Chapter 7.2.3 for a description of the data analysis procedure and theoretical approach

8.3 Results

Based on the analysis, the themes that were created were categorized under the broad concepts of (1) accessibility of betting via a smartphone, (2) in-play betting motivating factors to participate, (3) in-play vs. pre-match betting engagement, and (4) beliefs and attitudes towards the 'cash out' feature.

Table 8.1

Table of themes and sub-themes from interviews with online sports bettors

Theme	Sub-theme
Accessibility of betting via a smartphone	Transition from betting at a bookmaker's shop Ease in placing a bet Ability to place a bet anywhere
In-play betting motivating factors to participate	Increases excitement Makes games more intense Allows gamblers to use their betting skill and knowledge
In-play vs. pre-match betting engagement	
Beliefs and attitudes towards the 'cash out' feature	Recouping a losing bet The 'cash out' monetary value being high Regret after cashing out

8.3.1 Accessibility of Betting via A Smartphone

The three sub-themes for betting via a smartphone were the: (1) transition from betting at a bookmaker's shop, (2) ease in placing a bet, and (3) ability to place a bet anywhere.

Transition from Betting at A Bookmaker's Shop

Many participants described how they initially began betting at a high street bookmakers' shop, then transitioned to online gambling once it had become more popular. The factors that influenced sports bettors to gamble online included an increase in the number of online bookmakers, 'welcome offers' and other inducements offered by online operators, and the convenience of accessing online betting websites. Using a smartphone to place sports bets was the primary method of bet placement by everyone in the study sample. For example:

"I guess I moved over from the bookies as soon as I had a [smart]phone for the first time" (Participant 6)

"We all went down on our lunch break to go and put football bets on. So I just started doing it then…in the shop on the coupon" (Participant 17)

"If I had a spare couple of quid I'd go and get bet slips down the bookies. I don't go into bookies anymore, I do it all online; on apps and on the internet and stuff" (Participant 12)

One participant commented that they preferred to place bets online because it offered a cash-out feature, whereas the high-street bookmaker did not: This suggests that facilities offered (offline vs. online) play a role in an individual's choice of where to gamble.

"Online betting gives you the option to cash out, and you don't really get that ability in the betting shop" (Participant 6)

Ease in Placing A Bet

Many participants commented on how easy it is to place a bet via a smartphone or tablet, compared to other methods (e.g., a laptop, high-street bookmakers). For example:

"It's obviously very convenient to do it on your [smart]phone or your tablet rather than getting a laptop out and logging in" (Participant 5)

"It's just convenience, isn't it? It's in your pocket, turn it on [smartphone]. The apps are really easy to use" (Participant 1)

Other participants commented that they bet on a mobile device because it has the advantage of saving time. For example:

"It's easy to do – so it's in front of you and it's on your [smart]phone. There's no going down to the [bookmaker] shops" (Participant 12)

"You could be out and about and think 'there's a couple of games later, I'll just have a quick bet on it' and then you're away. You don't have to scout around for a bookies or anything like that" (Participant 18)

"On an app, it literally is just the case of pressing buttons and pressing place bet…so it's as quick as your thumb could move" (Participant 17)

As well as gambling apps, there were other apps mentioned that were accessed on smartphones that assisted participants with bet placement. These were *Flash Scores* (a website that allows sports bettors to see live match updates) and *Odds Checker* (so sports bettors can compare odds against different online bookmakers). One participant discussed how using a smartphone allowed him to compare different inducements across gambling sites:

"It's normally on a mobile. It's just easy isn't it? You've got it to hand and you tend to get better offers online and you can see what offers they are straight away and compare them to other betting sites" (Participant 2)

Ability to Place A Bet Anywhere

As previously mentioned, the most popular method for placing bets was on a smartphone. Some participants discussed how it was now possible for them to access the gambling apps in any location, at any time, and they did not have to rely on a laptop or computer in order to place a bet. Therefore, one of the main advantages of betting on a smartphone was the flexibility of location that it allowed. For example:

"It's really convenient being on a mobile [phone]. My phone's in my hand the majority of the day anyway and the gambling apps are on my phone anyway" (Participant 1)

Some participants discussed how they placed bets in multiple locations using their smartphones. Frequently mentioned betting locations included at the participant's home, the pub, at friends' houses, and at work.

"It's just easy to use. Use can use it when you're at the pub, or in different environments. It's handy for the in-play ones" (Participant 19)

> *"I liked having the convenience of being able to do it anywhere, anytime, not having to be at home sat in a specific place to do it. Which is probably part of the problem as well because I could literally do it anywhere. You know, I could do it in the car, out shopping, at work, anywhere like that and no-one would know what I was doing"* (Participant 5)

One participant commented on how he used his smartphone to check the status of his bet. Therfore, even when they were not actively betting, they were still thinking about and distracted by sports bets that they had previously placed:

> *"On a Saturday I would watch the scores live but if not I'm always checking my [smart]phone constantly. Last time I went out for a meal I had a bet running and everyone was like 'why are you on your phone and I was like 'the football's on'"* (Participant 6)

8.3.2 In-Play Betting Motivating Factors to Participate

The three main sub-themes as to reasons why participants engaged in live in-play betting were that it: (1) increases excitement, (2) makes the game more intense, and (3) allows gamblers to use their betting skill and knowledge.

Increases Excitement

Betting on a sporting event provided increased interest and excitement while watching it. Many participants commented that they took part in in-play sports betting because it increased their engagement with the game. This is because it made the game more exciting to watch because there was an opportunity for monetary gain. For example:

> *"It increases excitement of that game and your attention and enjoyment"* (Participant 2)

> *"It makes the game more interesting…and more exciting"* (Participant 11)

> *"It's quite fun trying to predict what's going to happen"* (Participant 19)

One participant described online sports betting as a "buzz". A feeling of excitement has come from placing a bet, and this is amplified if the bet is a winning bet, particularly if he is with friends and they are sharing the experience.

> "*Well it's just a bit of a buzz really. Like…if you've got a bet on something…the bets I tend to place are bets that like carry on going on for most of the game. Like…if I'm betting on an individual match, let's say I'm betting on somebody to score at a particular time, you've got the whole game that could actually come through. So it's the whole buzz and expectation thing. When you win it is actually a buzz, especially if you're with your mates and they've got it on as well"* (Participant 8)

Makes the Game More Intense

Some participants discussed how in-play betting increased feeling of intensity when watching and betting on a match simultaneously. Sports betting on a match whilst watching it allowed for the game to be more psychologically interesting. For example:

> *"It makes the game more enjoyable and adds a bit of tension"* (Participant 19)

> *"With in-play, you're more invested in it. You can place sports bets that are in the future and if you do that, I don't know about other people, but I can place a bet over a span of a few days and then forget about it and come back to it and think 'oh, it lost'. Whereas in-play you're more invested in what you're watching anyway. So it's not very often you would place an in-play sports bet and not be watching the play happen. There's a bit more of a thrill to it I guess"* (Participant 3)

Allows Gamblers to Use Their Betting Skill and Knowledge

Some individuals engaged in in-play sports betting because they believed that they possessed skills which would influence the outcome of their bets, and thus providing them with a level of control. Many participants commented that they watched the game whilst betting on it, because this allowed them to assess the status of their match before placing a bet. For example:

"If a team scores then they get momentum and they turn it over, especially if you're expecting them to win anyway. So I suppose watching the game and thinking 'yeah I know what's going to happen'" (Participant 6)

"I guess in-play betting you feel more confident that you know. Everyone thinks they're an expert. You're watching it and you think 'well there you go, this is actually quite accurate'…You've been watching the game and that would inform your decision" (Participant 15)

"If I'm not watching it because I can't see what's going on, I won't [bet in-play]" (Participant 7)

A few participants then discussed how a game developed and what they had observed during the match influenced them to place a bet. Therefore, in-play betting potentially encourages individuals to place further bets based on the status of the match. For example:

"It might have been Newcastle [United] at Stoke [City] and I was watching it and I got the impression that Stoke were going to score before half time and they got a penalty in injury time in the first half and they scored and it felt great" (Participant 7)

"The ultimate goal is to beat the bookies, isn't it? So I guess when you play in-play you think 'I've analysed this and there's loads of corners coming', or God knows what. And you can make more of an educated guess. It makes you feel better about the gambling" (Participant 11)

8.3.3 In-Play Betting Vs. Pre-Match Engagement

Participants also made comparisons between fixed odds sports betting and in-play sports betting. Some of the participants commented on the dynamic odds being offered by online bookmakers during a game as a motivation for engaging in in-play sports betting. One of the benefits of this was possible monetary gains which were seen as an advantage. For example:

"You can easily make more money in-play betting rather than pre-match betting because you know, with pre-match the odds are set at a certain price and that's what the bookmakers offer. But in-play the price changes and that's what a lot of people will

look for. They'll see whether they can get value. They'll see where they can maybe make as much money as they can" (Participant 14)

"Obviously the odds change as the match is going, so you can get quite lucrative winnings back depending on how much you put down" (Participant 18)

"I'll only in-play bet if I'm actually watching the football because the idea, or the one good thing about in-play betting is that you can put a bet on before the match but you realize that ten minutes in that it's not going the way that I thought it would and the team that I expected to win are actually not playing particularly well at all and it looks like the other teams are going to win and put on another bet" (Participant 6)

Most participants discussed this in relation to football because that was the event that they were betting on. However, one participant discussed this idea in the context of betting on tennis and darts:

"You look at something that's going against what should be happening and you try and hit it at the point when it's furthest away from where it should be. I suppose tennis is a good example of that. The odds change so dramatically. [In] darts, the odds change so dramatically, that when you do it prior to the game you'll never get odds on the favourite. But during the game, you can get great odds on someone like [tennis player Novak] Djokovic to beat someone outside of the top ten [tennis players] providing that Djokovic is already a set and a break down in the second [set] or something" (Participant 12)

A few participants did view the odds changing as beneficial to their sports betting outcomes and preferred to place bets before the event started. This was because they had more time to think about the bet before they placed it. This was most popular for football accumulators placed on Saturday fixtures. The following example is of a participant who wanted to take their time before placing the bet:

"You have little time really, so you've got to rush yourself a little bit. I don't like to rush myself, I like to think about it a little bit" (Participant 10)

The timing of when the match was on was also discussed as a reason for placing a pre-match bet as opposed to an in-play sports bet. That is, specific sports are typically shown on specific days or time, which may impact what type of bet is placed and when. For example:

> *"If it's a Saturday, I'm more likely to do a pre-match bet because there is a full set of fixtures. If it's on a weeknight for [the European soccer] Champions League or something like that, it's more likely to be on TV, and I would be more likely to do an in-play bet when something's happened in the game which triggers me thinking about betting"* (Participant 17)

> *"But if I had 10 minutes, rather than….because bets are a bit more long term…like you can do kind of action…kinda sort of stuff…like with the in-play bets, you are like involved with it more often than not because you're more invested in the game and whatever it is you're sort of in-play betting with but if you start placing a bet on something like an accumulator and it's got like a bet that's on right now or something or starts like five hours later, you don't really always keep track of it as much. But you can kind of place it and leave it*" (Participant 3)

For in-play sports betting, as opposed to pre-match betting, the odds are constantly updated to reflect the status of the match. This may encourage individuals to place bets more impulsively to react to the changing odds. The following participant discussed how the odds were something that changed rapidly:

> *"The odds can change pretty fast. Obviously, it just depends on what's happening. So, if you're betting on a football game that's in-play and one team is obviously doing a lot better than the other, you can just start to see the odds getting shorter and shorter and shorter. If you place a bet sort of, fast, if you hesitate a little bit maybe, you could end up, if it wins, obviously if you place money on that bet you'd get less money than you thought you would with the bet had you been a little bit quicker placing it. That's just in-play. It's just the environment with it I guess"* (Participant 3)

A few participants reported that in-play sports betting allowed them to continue their betting and allowed them an attempt to recoup their losses or place multiple bets in a game. For example:

"It's almost like an instant win depending on what you're in-play betting on. You don't have to wait until the end of the game to win so you could potentially have a few in-play bets on the same game" (Participant 7)

"It does make it very easy or very quick to put bets on in a short space of time, and I always think that that's kind of dangerous if you do get in that mindset" (Participant 9)

8.3.4 Beliefs and Attitudes Towards The 'Cash Out' Feature

There were three sub-themes related to the 'cash out' feature: (1) recouping a losing bet, (2) the 'cash out' monetary value being high, and (3) regret after cashing out.

The analysis showed that participants had different motivations for cashing out, including minimizing losses when the bets were losing, and acquiring more funds to allow the placement of additional bets. Bets can be withdrawn whilst a sporting event is still in play, to guarantee at least some profit and/or to minimize losses. This was dependent upon the cash out value being what the participants perceived to be an acceptable amount. Some participants chose not to cash out their bets at all. All participants had cashed out a bet at some point in their life. The most popular sport where there was the cashing out of bets was during football matches. Reasons for this included the length of the sport (i.e., being a 90-min game), and there were more likely to be surprises or changes within the game which resulted in the participant potentially cashing out their bet. One participant talked about how once the game started and they cashed out, the newly acquired funds allowed them to gain momentum and continue betting to reach an expected target that they originally had in mind. For example:

"I think it encourages quite a bit of repetition betting in a sense that you might cash out and use that money straight away [to re-bet]. So there's a bit more of a momentum type thing. If you cash out, and say you've got a bet with returns of £420 and you cash out at £70 and you've only placed £10 down to get that, you're still £60 up. But you want that, or you have an idea of £420 in your head at some point. So you think 'I've got a bit of a bigger sum to reach here-so you'll probably just invest your money back into the site'. I think at that point, once you've got something, I'm not playing with the original money that I invested with anymore" (Participant 3)

Another participant discussed the emotions that came into play when deciding whether or not to cash out their bet. They described different emotions they have experienced, with one way resulting in cashing out the bet due to "nerves" and the other letting the bet ride because they felt more confident. For example:

> *"I would cash out because of the nerves. I'd be sweating it, thinking 'you know I've made the money, let's not be greedy, have it over and done with'. But on the other hand, I haven't cashed out because I'm confident, I'm risking it a little bit"* (Participant 16)

> *"I've put on an unlikely bet and my team has scored but they're still losing so they've offered me a cash out which was more than my stake and I've changed my mind and thought the team I bet on aren't going to win, so it's worth taking the extra or doubling my stake instead of ten times my stake. Or just cutting my losses essentially"* (Participant 17)

The 'Cash Out' Monetary Value Being High

The cash out value has to be enough to be deemed worth cashing out by the sports bettor. For example, in the instance that the bet has made a profit on the initial stake. The performance of the team may influence whether individuals cash out their bet because they feel the team are not performing well and the bet may lose. For example:

> *"If I thought that the bet was going to lose then you want to try and recover as much of the original stake as possible"* (Participant 19)

> *"If the accumulator has got to a good amount where I'm making at least more money than I expected or if they look like…I don't think the team is going to win or the bet isn't going to come in then I'll try and cash out early but usually I'll end up just leaving [the bet] on"* (Participant 11)

Other participants would only cash out if they were betting for a profit, or alternatively if they thought that the cash out value was at an amount that was worth taking. For example:

> *"It will always be for a profit. If I cashed out and lost money, I'd think well I might as well have let it run its course"* (Participant 7)

"I probably would cash out if my winnings were, say, £250 to £300, because that's quite a lot of money. Say I'm on for £15/£20 I'd probably just see [the bet] through until the end" (Participant 18)

Regret After Cashing Out

A few participants expressed that they had not always made the correct cash out decision and then came to regret it after. This went both ways with participants either affecting their profits by taking a risk that turned out to be cashing out too early, rather than letting the bet ride or have the bet lose and not cash out. For example:

"I've won a few bets but cashed out too early so I just don't bother anymore" (Participant 19)
"There's been a lot of times that I've waited on it and thought 'no, I'm going to ride it out' and it's lost and I should have taken the cash out" (Participant 6)

"There's been a few times where I haven't cashed out and I've regretted it because I've been close to winning money and I've been offered quite a good amount of money to cash out and I've not taken that option" (Participant 10)

"A couple of weeks ago I placed an in-play accumulation. It was like five teams and within about 20 minutes in the second half they were all winning…I was getting offered £90 but had I let it run. I was being offered around £400 but I took it anyway. I took the £90 quid and of course 90 minutes came and if I'd let it play, it would have won, but I still see it as making money anyway. I still made £70 but I was a bit hacked off. Had I just let it run…I could have had a bit more…I've still not been able to decide whether cash out is a good thing or not because it can be beneficial at some point and I guess that's the risk you take" (Participant 14)

8.3 Problem Gambling Behaviour and In-Play Betting Features

Whilst most participants discussed the advantages of in-play betting on a mobile app, there were some aspects of mobile betting that appeared to encourage problematic gambling behaviour. Online sports betting removes the social context where people who have problems

with their gambling behaviour might experience guilt, self-consciousness, fear of stigma, and friend or family intervention due to repeated losses and high expenditure. For example, the following participants who had experienced gambling problems discussed how they were more likely to remain in control of their in-play betting expenditure when they were in a social environment:

> *"There's been times when I'm with friends, I'll make bets that are always a bit lower but when I'm on my own I have a moment of 'you know what, I'm going to put a big bet on this' just because, like, no-one's around to be like 'don't do that'"* (Participant 1)

One participant described how sports betting was initially a social activity that then developed into a more compulsive behaviour, associated with secrecy. Betting on a mobile allowed this individual to hide their gambling whilst in the same room as their partner:

> *"It kind of got more of a problem when I started sports betting and I would do it on my own. Or we might be in the same room on the sofa but I'd be on my phone and [my partner] wouldn't know what I was doing. I was very secretive about it once it got past that initial gambling for fun stage"* (Participant 5)

Mobile betting provides a solitary environment and appears to facilitate riskier gambling in these cases compared to in-person betting at a high street bookmaker. This was reflected in some of the quotes:

> *"I liked having the convenience of being able to do it anywhere, anytime, not having to be at home sat in a specific place to do it. Which is probably part of the problem as well because I could literally do it anywhere. You know, I could do it in the car, out shopping, at work, anywhere like that and no-one would know what I was doing. It helped me to keep it secret…even if I was at the gym I'd have my phone with me and I'd be able to place bets at the gym and follow them whilst I was there. Anywhere really, anywhere that I could get a bit of privacy so no one could see what I was doing"* (Participant 5)

> *"I've been gambling for so long and you know, addiction has cropped up quite often and I kind of keep it private now. Well, as much as I can. So, like no-one really knows*

that I do it anymore. Well, they do and they don't. Sometimes I just can't hide it, especially if I had like a big loss, people know. I do it on my tablet and I do it in private because, one, I don't want anyone complaining at me, and two, I don't want anyone getting worried. Um, three, it's a personal thing. I want to enjoy it myself. It sounds a bit morbid actually, you know, now that I'm talking about it, but yeah, I do it on my tablet and I do it alone. I never gamble with friends" (Participant 14)

In most cases, participants described online sports betting as a gambling activity involving skill, analysis, and engagement with the sporting event. However, one participant described how as their gambling behaviour became increasingly problematic, they transitioned into placing bets without much thought of the outcome and without prior analysis. Instead, they selected the type of bet that would get them the highest monetary return:

"On a roulette table or blackjack there is a house edge and you will lose eventually no matter how good of a run you go on because they're designed that way. But with sports betting, I felt like I could analyse the form and look at the game and get a feel for it and bet according to that, which is what I first started betting on. But as it got later on, I wasn't betting based on any data, or form, or feeling. I was literally just looking at the odds and placing a bet on it. I was betting on anything…that I maybe had no idea about" (Participant 5)

There is a constant stream of sports betting opportunities available for in-play betting. One participant described how they temporarily banned themselves from gambling online after they began in-play betting on sporting events that they would not ordinarily be interested in:

"There was probably a little bit of an addictive sort of temptation, like, looking at your phone and placing bets on matches that you didn't really care about" (Participant 19)

8.4 Discussion

The purpose of the present study was to contribute to knowledge concerning online sports betting features, specifically in-play sports betting and the 'cash out' feature. Based on the analysis, four broad themes were created (accessibility of betting via a smartphone, in-play betting motivating factors to participate, in-play vs. pre-match betting engagement, and beliefs and attitudes towards the 'cash out feature) comprising nine subthemes (see Table 8.1).

To date, there has been a small amount of research carried out on in-play sports betting and the findings from the present study will be discussed in relation to these. One theme was ease of access to in-play sports betting using smartphones. Sports bettors now have immediate access to sports betting websites in most locations and situations. The findings here suggest that smartphone betting allows immediate access to gambling, supporting previous research that online gambling is easy to access via mobile devices (Deans et al., 2016a). It has been previously suggested that this increased accessibility to online gambling websites and the ease of being able to use online platforms, may speed up maladaptive learned behaviours, including problem gambling (James et al., 2017; McCormack & Griffiths, 2013). The sports bettors within the present sample had a preference for placing bets on mobile devices, which supports previous research that sports bettors (83.4%) prefer to use a remote device to place a bet rather than going to a betting shop (Lopez-Gonzalez et al., 2019a). Additionally, the same study found that problem gamblers were more likely to prefer to use a mobile device.

Sports bettors in the present study would often bet on the match in order to make the game appear more exciting and intense. Previous research has suggested that one way in which the structural characteristics of in-play sports betting may contribute to problem gambling is that they make the event more interesting and/or exciting (Parke & Griffiths, 2007). Gambling games that involve speed and excitement have been previously associated with problem gambling (Parke & Griffiths, 2007). Whilst the findings here concur with previous research, it may be of value to clarify which features of in-play sports betting add to the excitement and if these are more specifically related to problem gambling.

One area that was prominent within the interviews was participants' awareness of the odds that were being offered during in-play betting by the bookmakers. Lamont et al. (2016) reported that live odds updates during sports events may prompt bettors into placing impulse bets. These impulse bets were more likely to be placed if the odds were perceived as good and related to their favourite team. Some participants believed that it was easier to make money in in-play sports betting as opposed to betting before a match. Some gamblers perceive sports betting as a skill-based form of gambling (Cantinotti et al., 2004). Previous research on motivations to engage in sports betting in Tasmania (Australia) was related to the sports bettor's perceived amount of knowledge or experience with the sports that they were betting on (Palmer, 2014). In a study of 258 individuals, Khazaal et al. (2012) reported that experts (i.e., professional soccer players, coaches, or journalists) were no more successful at predicting football match outcomes than the non-professionals. In systematic review carried out on the role of chance

and skill in sports bettors (and focusing on cognitions in the behaviour), Mercier et al. (2018) reported that sports bettors overestimated the importance of skill on the overall match outcome. Ladouceur et al. (1998) found that gamblers on horse races who were classed as 'experts' picked more winning selections but did not have better monetary outcomes than random selection. It was concluded that the experts were more thoughtful, careful, and likely to place safer bets.

It is possible that some in-play sports gamblers may experience higher levels of perceived skill in the activity due to cognitive distortions. It is possible that cognitive distortions could lead to the development and maintenance of a gambling disorder. Cantinotti et al. (2004) examined whether the idea of having betting skill was illusion or chance. Compared to bets made by expert sports bettors versus randomly selected wagers, they found that sports bettors demonstrated a higher accuracy for correctly predicting game outcomes compared to chance (i.e., randomly selected bets), although, the overall amount of money won was not higher than chance. The researchers concluded that the notion of skill when betting is the result of cognitive distortions.

Theoretical papers that have focused on the structural characteristics of in-play sports bettors have specifically noted that the nature of the gambling activities has changed from what was previously a discontinuous (low-risk) form of gambling to a continuous (high-risk) form of gambling (Griffiths & Auer, 2013; Lopez-Gonzalez & Griffiths, 2017a). In the present study, participants noted that getting a bet credited in in-play sports betting felt like "an instant win" and that multiple bets could be placed within a small window. Therefore, the shortening of bets being paid out has reduced delays in receiving rewards from gambling, and allowing the gambler the potential of placing multiple bets per match.

The present study found that reasons for using the 'cash out' feature varied between individuals. Some individuals cashed out to cut their losses, whilst others cashed out when they were betting a profit, while other preferred not to cash out and let the game run to completion. Lopez-Gonzalez et al. (2019a) found that problem gamblers were more likely to use the 'cash out' feature than non-problem gamblers. Further research should investigate what types of individuals (in terms of demographics and personality traits) use the 'cash out' feature and their motivations for doing so. Comparisons have previously been made between the 'cash out' feature and stock market trading (Lopez-Gonzalez & Griffiths, 2017a). For example, cashing out is similar to a stop-loss order within financial trading, which is an order to sell an existing

shareholding which is triggered if the bid price falls to, or below the stop price set by a trader. This might be used when somebody buys a share to give them some protection and help minimize loss should a share price fall. With the 'cash out' feature, individuals can decide whether they are going to cash out when it receives a specific level of profit or cash out when the bet is losing a specific amount (or alternatively let the bet run until the end). Lopez-Gonzalez and Griffiths (2017a) claimed that in-play online sports betting may benefit from regulations that are currently applied within the stock market industry.

8.4.1 Limitations

The present study has a number of limitations to take into account when interpreting the findings. Firstly, the sample mainly consisted of non-problem male sports bettors, despite efforts by the research team to recruit female gamblers and more individuals categorised as problem gamblers. Future research should attempt to recruit greater numbers of females and problem gamblers in their samples. Secondly, the present study specifically targeted individuals who had placed at least one sports bet within the past six months. For this reason, participants may have had varied levels of engagement with sports betting and although they were assumed to qualify and meet the aims of the study, they were not representative of all online sports bettors or the wider betting population. Thirdly, the study relied on self-report data which can be affected by a number of well-known biases (such as social desirability and recall biases). Finally, it is important to highlight that the study was exploratory which allows for a preliminary understanding of in-play sports betting behaviour, rather than allowing for definitive conclusions, especially because of the sample size.

8.5 Conclusion

Overall, the sports bettors in the present study viewed in-play sports betting favourably and readily accessible. However, the results demonstrated that this is a way of gambling that can be played without interruption and which may lead to repetitive (i.e., continuous) gambling and/or unwarranted feelings of control. Given that this was an exploratory study, further research is required in order to draw more definitive conclusions. Future research could focus on the following areas: (1) qualitative and quantitative studies examining the motivation and perceptions of in-play sports betting use with females and/or samples of vulnerable individuals; (2) empirical studies on how factors such as the marketing and advertising of sports betting products influence sports betting behaviour; and (3) longitudinal studies to track the game-play

of in-play sports bettors. Further research into this area is required in order to provide direction for policymakers to develop responsible gambling measures for this relatively new way of gambling.

Chapter 9: An exploratory quantitative analysis of gambling motives and modes of access among sports bettors

9.1 Background

There are currently over 600 licensed online gambling providers operating in the UK (Gambling Commission, 2020). Sports betting in the European markets is the most popular form of online gambling, comprising 41% of all games played in 2019 (European Gaming and Betting Association, 2020). Participation in some gambling forms, e.g., electronic gaming machines (EGMs), casino games, sports betting and horse race betting, are much more closely associated with problem gambling than other forms of gambling (e.g., lotteries and weekly sports/horse pools) (Binde et al., 2017; Cooper et al., 2021; Mazar et al., 2020; Williams et al., 2012a). Moreover, a recent review of the online sports betting literature found that prevalence surveys of sports bettors that have screened for problem gambling, and included online forms of sports betting, reported significantly higher prevalence rates of problem gambling than are typically reported in population-wide estimates (Winters & Derevensky, 2019). The popularity of sports betting is continuing to grow, and with this comes the potential for an increase in sports betting-related problems. Therefore, it is important to understand the characteristics and motivations of problem sports bettors in order to develop relevant interventions and treatment strategies for gambling-related harm. This chapter will examine the demographic characteristics of sports bettors, their motivations for sports betting, and the ways in which they access sports betting.

9.1.1 Demographics of sports bettors

Chapter 2 provided a detailed overview of the typical socio-demographic characteristics of sports bettors. In summary, previous research has indicated that the propensity to participate in sports betting depends on several demographic factors. The distinguishing demographic features of sports bettors have included the individuals' young age, un-married status (mostly single), male sex, medium or higher levels of education and being employed or a full-time student (Granero et al., 2020; Hing et al., 2015a; Hing et al., 2017a). These demographics also align with the common features of individuals who regularly engage in sports betting and who meet the criteria of being a problem gambler. It is important to consider gambling demographics in order to inform preventative interventions or policy measures that may help to limit harm from this gambling form.

9.1.2 Mode of accessing sports betting

The increase in the availability and accessibility of gambling products has raised concerns that these newer gambling opportunities, such as mobile gambling, may be contributing to increases in gambling-related problems (Gainsbury et al., 2016c; Reith et al., 2016). Due to the growing popularity of online gambling, attention is increasingly being directed towards understanding the relationship between online gambling and gambling-related problems.

A number of studies have identified higher rates of gambling problems among online gamblers compared to land-based gamblers (e.g., Gainsbury et al., 2013; Volberg et al., 2018; Wood & Willams, 2010). However, many online gamblers occasionally or often engage in land-based gambling and vice versa. Difficulties in defining an online gambler have been addressed by Wardle et al. (2011a). Wardle et al. (2011a) observed that there has been a tendency for researchers to simply compare online gamblers with offline gamblers. They argued that employing a dichotomy of online versus offline gamblers to assess the impact of gambling does not recognise the complexity of how individuals gamble, and understanding how individuals gamble is likely to be more complex than splitting the population into two homogenous groups (Wardle et al., 2011a). More recently, studies have begun to compare gambling behaviours beyond offline versus online gambling and have reported that mixed online/land-based gamblers have significantly higher problem gambling severity than exclusively online or land-based gamblers (Blaszczynski et al., 2016; Gainsbury et al., 2015d; Papineau et al., 2018; Wardle et al., 2011a).

There has been some evidence to suggest that sports betting online is positively associated with a greater risk of experiencing gambling-related problems. For example, Lopez-Gonzalez et al. (2019a) showed that online sports bettors scored significantly higher on the Problem Gambling Severity Index (PGSI; Ferris & Wynne, 2001) compared to those who preferred to wager at a land-based venue (Lopez-Gonzalez et al., 2019a). Among treatment-seeking gamblers, Estévez et al. (2017) reported that sports bettors who place their bets exclusively online had higher levels of debt compared to land-based gamblers (Estévez et al., 2017). However, both of the aforementioned studies compared problem gambling problems between online versus offline sports betting groups, and did not consider the role of mixed mode sports betting.

In a cross-sectional study of Australian sports bettors (n=1813), Russell et al. (2019b) asked participants to indicate the percentage of their sports bets that were placed online, via land-based venues, and by telephone calls. This method allowed the authors to compare the

proportion of bets placed by different gambling categories using different modes of access for sports betting. They found that those categorised as problem gamblers placed fewer bets online compared to non-problem gamblers, but both moderate-risk and problem gamblers placed a higher proportion of bets by making a call over the telephone. In the same study, it was found that moderate-risk gamblers and problem gamblers placed a significantly higher proportion of their bets in-play. In Australia, it is illegal to place online in-play bets, but some bookmakers allow bettors to call and place live bets over the telephone. Therefore, the difference in betting mode preference is likely due to the different nature of the bet types placed by sports bettors in higher risk groups (Russell et al., 2019b).

Online gamblers have been found to be more likely to gamble on sports than land-based gamblers (Gainsbury et al., 2013, 2014). The increasing popularity of online sports betting and the provision of gambling using this medium has resulted in concerns about the impact of this form of gambling activity. Research into smartphone sports betting has suggested that the immediate accessibility, as well as the pervasiveness of marketing for online sports betting, may make it harder to control sports betting involvement (Parke & Park, 2019). A recent systematic review by Mora-Salgueiro et al. (2021) suggests that future gambling research should look at online gamblers and mixed gamblers as different subgroups, something that is presently missing from the gambling literature. Therefore, the present study will fill this gap by exploring how different patterns or combinations of sports betting access may be associated with gambling-related harm.

9.1.3 Sports betting motivations

Gambling motivations are important factors influencing gambling behaviour and research has shown that motives for gambling are likely to play a role in the risk of developing gambling problems. Therefore, another method used to increase the understanding of problem gambling behaviour is to examine the relationship between types of gambling motivation and gambling problems.

Research has shown that individuals do not gamble solely for financial reasons, and there are a diverse range of non-monetary gambling motives. There are five motives for gambling, with some variation, that often appear in the gambling literature: challenge (or learning/knowledge; Binde, 2013; Francis et al., 2015), coping (or escape/avoidance; Binde, 2013; Fang & Mowen, 2009; Francis et al., 2015; Stewart & Zack, 2008), enhancement (or self-esteem/excitement;

Fang & Mowen, 2009; Francis et al., 2015; Stewart & Zack, 2008), social (Binde, 2013; Fang & Mowen, 2009; Francis et al., 2015; Stewart & Zack, 2008), and monetary (Binde, 2013; Fang & Mowen, 2009; Francis et al., 2015).

Variations in the motivations and characteristics of gamblers and the types of gambling activities involved mean that results found in one situation are unlikely to be relevant in another (Griffiths & Delfabbro, 2001). For example, motivations for gambling are not always generalizable to all gambling activities (e.g., Francis et al., 2015; Mathieu et al., 2020), to all genders (e.g., Lloyd et al., 2010; Wardle et al., 2011b), to all cultures (e.g., Oie & Raylu, 2010), to all populations (e.g., Milosevic & Ledgerwood, 2010), and to all levels of problem gambling risk (e.g., Sundqvist et al., 2016).

Different forms of gambling have been found to be associated with divergent motives. For example, Fang and Mowen (2009) reported that the functional motives (i.e., money, social contact, and self-esteem) significantly predicted sports betting. Flack and Stevens (2019) reported that horse and sports bettors were likely to gamble in order to increase positive emotions, including excitement. Sundqvist et al. (2016) found that (using the Reasons for Gambling Questionnaire; Wardle et al., 2011b) individuals who favoured casino and card games, and sports betting were more likely to gamble for social reasons than individuals preferring lotto/bingo. However, these findings must be interpreted with caution as the lotto and bingo players were combined into the same group for analysis. This may explain the unexpected findings of Sundqvist et al. (2016), as one of the typical motivations for playing bingo at a bingo hall is to socialize (Evans et al., 2016; Breen, 2009).

Gambling motivation has also been found to vary by gambling severity (e.g., Flack & Morris, 2015; Schellenberg et al., 2016). It has been reported that non-problem gamblers reasons for gambling are more likely to include excitement or to socialise and alleviate boredom or negative moods. On the other hand, those categorised as problem gamblers are motivated to gamble in order to regulate emotional states (Flack & Morris, 2015; Ricketts & Macaskill, 2003; Wood & Griffiths, 2007b).

There is evidence to suggest that men and women differ in their motivations to gamble. For example, Lloyd et al. (2010) reported that males were more likely to gamble on the internet for enjoyment or monetary reasons but were less likely to gamble in order to regulate their mood. Similarly, Wenzel and Dahl (2009) found that female problem gamblers were more likely to

gamble to escape from negative emotions than male gamblers. In the same study it was reported that male problem gamblers were more likely to be motivated by cognitions about winning and egotism (narcissism/attention seeking) (Wenzel & Dahl, 2009).

While there is evidence to suggest that motivations to gamble vary across different gambling activities and individual differences, there is a paucity of research using empirical measures to examine the motivations of online sports bettors. Much of the research to date has relied on qualitative explorations of sports betting motivations (e.g., Killick & Griffiths, 2021; Lamont & Hing, 2020). In addition, it is largely unknown whether these reasons for online sports betting vary according to the level of gambling severity.

9.2 Aims of the present study

The present study addresses several areas in the sports betting literature that require further attention. Firstly, despite indications that online sports betting may be increasingly contributing to problem gambling, limited research has considered whether specific patterns of accessing sports betting are more likely to be associated with problem gambling. Therefore, an exploratory latent class analysis (LCA) was conducted to examine how a self-selected sample of international sports bettors use different combinations of sports betting platforms, and whether any of the identified subclasses were more likely to be categorised as a problem gambler in comparison to at-risk, and non-problem gamblers. Secondly, relatively little is known about the motivations of sports bettors, although this is starting to receive more attention from researchers. Therefore, the present study will also seek to explore the factor structure of a standardised measure of gambling motives (RGQ; Wardle et al., 2011b) in an international sample of sports bettors, and explore how motives for sports betting vary among different population sub-groups. By understanding the characteristics of sports bettors, or what factors might predict sports betting problem gambling, relevant interventions and treatment strategies can be developed to potentially reduce the number of problem sports bettors. The following research questions are addressed:

Research question 1: What is the relationship between socio-demographic characteristics and their association (if any) with problematic gambling among sports bettors?

Research question 2: What is the relationship between the type of platform used to place sports bets and their association (if any) with problematic gambling among sports bettors?

Research question 3: How do motivations for sports betting vary among different population sub-groups?

Research question 4: What is the relationship between motivations for sports betting and what is their association (if any) with problematic gambling among sports bettors?

9.3. Methodology

9.3.1 Participants

A total of 743 participants initially took part in the online survey. A total of 109 participants were deleted from the analysis for a number of reasons. Firstly, 101 had only answered the demographic questions and did not answer any of the questions on sports betting behaviour. Second, five participants were removed because they did not answer any of the questions about problem gambling severity status. One participant was removed because they indicated that they were under the legal age to gamble. Third, data from an additional two participants were removed as they were thought to be fabricated. These participants answered 'yes' to every question and 'strongly agree' to all Likert-type questions. Excluding participants in this way replicated strategies from previous studies such as LaBrie et al. (2007) and McCormack et al. (2014). This meant the final sample size was 634 participants that completed the survey in an appropriate manner for analysis.

9.3.2 Measures

9.3.2.1 Demographic questions

Participants were asked to indicate their age, gender, ethnicity, country of residence, marital status, highest level of education and their working status. A full list of questions can be found in Appendix G.

9.3.2.2 Mode of accessing sports betting

This question was developed for the present survey. Participants were asked "In the past 12 months, how did you bet on sports events?". They were asked to indicate which of the following six response options were applicable (i) in-person at a high-street bookmaker; (ii) in-person at a venue; (iii) on the phone to the bookmakers; (iv) online with a betting exchange; (v) online with a bookmakers; and (vi) somewhere else/another way. Participants were able to select more than one option.

9.3.2.3 Reasons for gambling

Motivations for gambling was assessed using the Reasons for Gambling Questionnaire (RGQ; Wardle et al., 2011b). The RGQ was developed for use in the 2010 British Gambling Prevalence Survey (BGPS; Wardle et al., 2011b). The survey allows for the presentation of empirical information about motivations for gambling among populations and to examine how these reasons differ between different socio-demographic subgroups (Wardle et al., 2011b). The RGQ has demonstrated concurrent validity in assessing gambling motives among the general population (Canale et al., 2015a). The RGQ consists of 15 items comprising five factors: enhancement (e.g., "because it's exciting"), money (e.g., "for the chance of winning big money"), recreation ("e.g., "as a hobby or a past-time"), coping (e.g., "to relieve tension") and social ("e.g., to impress other people"). Participants were required to indicate whether they took part in gambling activities: (1) never; (2) sometimes; (3) most of the time; (4) always. The wording of the question was amended in order to ask participants their motivation for sports betting in the previous 12 months (rather than gambling in general). Cronbach's alpha for the present study was .64 (winning), .79 (social), .66 (pleasure), .68 (mastery), and .81 (affect regulation).

9.3.2.4 Problem gambling screen

Participants completed the Problem Gambling Severity Index (Ferris & Wynne, 2001). The PGSI is a subset of the larger Canadian Problem Gambling Index (CPGI; see Ferris & Wynne, 2001). PGSI items include borrowing or selling to obtain money to gamble, chasing losses, escalating gambling to maintain excitement, wagering more than one can afford to lose, being criticised by others, feeling guilty, financial difficulties to one's household, harm to health and feeling that one might have a problem with gambling. The four response options are: never (0); sometimes (1); most of the time (2); almost always (3). Cut-off points are used to assign gamblers to categories consisting of 'non-problem gamblers' (PGSI= 0), 'low-risk' (PGSI=1–2), 'moderate-risk' (PGSI=3–7), or 'problem-gambler' (PGSI > 7) (Ferris & Wynne, 2001). The Cronbach's alpha for the present study was .95

9.3.3 Procedure

The aim was to distribute the survey on a large number of gambling forums and gambling websites. Initially, the aim was to post the survey link onto betting forums. However, most of the gambling forums do not allow individuals to post a URL and in other cases the posts were banned because they were believed to be spam. Therefore, participant recruitment was targeted at social media sites, particularly Facebook. A total of 95 different Facebook groups and 11

forums were accessed in total. See Appendix G for a list of gambling forums and Facebook groups that the study was posted on. Some Facebook groups required a request to join before posting, and others required a request to post onto the group and the post had to then be approved by a moderator. However, most of the posts were allowed. Where possible, or if unsure of the suitability of the post to the group, the administrator for the Facebook page was emailed to request for permission to post a link to the survey. Most of the administrators responded that this was acceptable. The Facebook pages ranged from specific sports betting activities (e.g., football betting tips, horse racing tips), to general sports fans pages (e.g., baseball, darts), to specific supporter pages (e.g., Nottingham Forest football club). The Facebook posts were checked regularly throughout the data collection period to reply to comments or questions individuals had made regarding the post.

In order to speed up participant recruitment, individuals were also recruited using Amazon Mechanical Turk (MTurk). MTurk is an online crowdsourcing platform that allows individuals (MTurkers) to complete tasks in return for small monetary payment. The use of MTurk for gambling studies has been previously supported. For example, Mishra and Carleton (2017) examined the use of crowdsourcing for gambling research using four studies. The studies demonstrated adequate test-retest reliability and good convergent validity across several measures of problem gambling and gambling involvement. Furthermore, positive associations between impulsivity, personality and behaviour risk-taking was found to be consistent with previous research (Mishra & Carleton, 2017). In the end, 160 participants from the final sample were recruited using MTurk, while the remainder of the participants were recruited using the other online methods previously discussed.

The survey was live from September to November 2020. Once the participant clicked on the link, they were rerouted to the survey found at Qualtrics.com. The survey could be accessed via a laptop/computer or a mobile device. The information page described the purpose of the study, what was involved in taking part, the survey would take approximately 15 minutes to complete. Participants were asked to indicate their informed consent to take part in the study. Participants were assured of their anonymity and that no personally identifying information would be collected about themselves apart from an email address, if they chose to provide it to enter a prize draw to win one of three £50 Amazon vouchers. Participants who were recruited from MTurk were not invited to take part in the prize draw. In order to take part, participants had to confirm that they had placed at least one sports bet in the 12 months prior. Anyone who

indicated that they had not was told that they were not eligible to take part and thanked for their time. Contact information for the research team was provided, as well as information for gambling support websites, in the event that the participant required support for their gambling behaviour.

9.3.4 Data analysis

Data preparation and calculation of chi-square tests, correlations, analysis of variance (ANOVA), factor analysis, and multiple regression were conducted using SPSS, version 25. A Latent Class Analysis (LCA) of sports betting platforms was conducted using MPlus Version 8.6 Demo (Muthén & Muthén, 2017).

Common testing procedures were applied to examine the differences between the gambling severity groups. These include the χ^2-test (for dichotomous and categorical variables), followed by post hoc comparisons using adjusted *Z* residuals. For these, adjusted *p*-values were used to account for any type 1 errors. Continuous variables were compared using a one-way analysis of variance (ANOVA). In cases of variances that were not homogenous, significance tests were conducted using the Welch-Test (Zimmerman, 2004). Where the Welch test was used, Games-Howell was used for post hoc analysis, as it is one of the recommended tests for unequal group sizes (Field, 2013, p.459).

An LCA was conducted using MPlus Demo in order to categorize participants into sub-groups depending on the platform/s that they used to place sports bets. Evaluation of the class solutions was conducted by appraising which class solution had the lowest Bayesian Information Criteria (BIC), Sample-Size Adjusted Bayesian Information Criteria (SSABIC), Akaike Information Criteria (AIC), Consistent AIC (CAIC) values (Williams & Kibowski, 2016). Lower Likelihood Ratio Chi-Square ($LR\chi^2$) values are also desired, and preferably these should be associated with a nonsignificant test value (Williams & Kibowski, 2016). The entropy value was also examined (Williams & Kibowski, 2016). The entropy value, which ranges from 0 to 1, was examined for each class solution. Higher entropy values indicate a better probability of managing to successfully classify participants into a latent class, depending on the number of latent classes being extracted (Masyn, 2013).

A principal component analysis (PCA) was used to explore the factor structure of the Reasons for Gambling Questionnaire (RGQ). The aim was to reduce the number of variables while retaining as much as the original variance as possible (Conway & Huffcutt, 2003). A PCA was

conducted on the 15 items with oblique rotation (direct oblimin). A direct oblimin rotation was used because substantial correlation between factors was expected (Field, 2013) and this oblique method permits the factors to be correlated with each other (Abdi, 2003). Items were included in a factor if their factor loadings were 0.40 or more (Field, 2013). The Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity were conducted to evaluate the factorability. A KMO (Kaiser, 1970) value greater than 0.5 is acceptable (Field, 2013). A significant Bartlett's test is required in order to confirm that the correlation matrix is significantly different from an identity matrix (Field, 2013), and therefore, the correlations between variables are (overall) significantly different from 0. Finally, the factors were interpreted and labelled based on the identification of a theme that summarised the items as they loaded onto each factor (Loewen & Gonulal, 2015).

9.4 Results

9.4.1 Demographic characteristics of sports bettors

Of the total 634 participants, 519 were male (81.9%), 114 were female (18%), and one participant did not indicate their sex (0.1%). The ages ranged from 18 to 69 years, however, just under half the participants were aged between 25-34 years (42%) and 35-44 years (22%). The mean age was 36.1 years old (SD=12.14 years). The mean age of the males was 36.94 years (SD=12.44), and the mean age of the females was 32.42 years (SD=9.84).

Of the participants, 553 indicated that they were white (87.2%). Over half of the participants were from the UK (n=380, 59.9%), 127 were from the United States (21.6%), and 43 were from Ireland (6.8%). The remaining 74 participants were from various other countries including Australia, India, and Spain (11.7%). Over half the participants were married /living as a couple (57.9%, n=368); 218 were single (34.3%) and 38 were separated or divorced (6.0%). 436 of the participants worked full-time (68.6%), while 65 (10.2%) were students. Over one third of the participants (35.4%, n=224) held an undergraduate degree or equivalent. 127 of the participants (20.1%) had completed a postgraduate degree. The remaining participants had completed A-levels or equivalent (n=136, 14.5%), or GSCE's or equivalent (n=92, 14.5%).

9.4.2 Problem gambling

Using the PGSI, 188 participants (29.7%) were identified as problem gamblers (73.9% male, 26.1% female). A further 107 (16.9%) were identified as moderate-risk gamblers, 147 (23.1%)

were classified as low-risk problem gamblers, and 192 (30.3%) were classified as non-problem gamblers.

9.4.3 Problem gambling rates based on the method of recruitment

Of the total sample, 160 participants were recruited using MTurk. Of these, 121 were male (75.6%) and 39 (24.4%) were female. In order to compare the proportion of problem gamblers between participants recruited from MTurk and social media, a chi-square test was conducted (Table 9.1). Significant differences were found between the recruitment platform and problem gambling categories ($\chi^2(3)=17.67$, $p<.001$). Adjusted residuals in the contingency table with a *Z* score higher than 2 showed that participants recruited using MTurk were significantly less likely to be a low-risk gambler (Z=-3.3) and significantly more likely to be categorised as a problem gambler (Z=3.1) than participants recruited via social media

Table 9.1

Recruitment method of participants compared with gambling category

	Social media					MTurk					
	All	NPG	LR	MR	PG	All	NPG	LR	MR	PG	χ^2 (*df*)
Recruitment method	474	138 (29.1%)	125 (26.4%)	86 (18.1%)	125 (26.4%)	160	54 (33.8%)	22 (13.8%)	21 (13.1%)	63 (39.4%)	17.67* (3)

Note. NPG- non-problem gambler; LR- low-risk gambler; MR- moderate-risk gambler; PG- problem gambler

*$p<.01$

Levene's F- test showed that the homogeneity of variance assumption was not met ($p<.001$). Due to the unequal variances of the gambling categories, Welch F statistics (Field, 2013) and post hoc tests using the Games-Howell procedure are reported. A one-way ANOVA (Table 9.2) showed a significant difference in mean age across the gambling categories, $F(3, 306.45)=9.28$, $p<.001$. The estimated omega squared ($\omega^2=.03$) indicated that approximately 3% of the total variance of participants' age is attributable to differences between gambling category.

Table 9.2

Differences in mean age between gambling categories

	Non-problem *n*=192 (30.2%)		Low-risk *n*=147 (23.1%)		Moderate-risk *n*=107 (16.8%)		Problem (29.6%)	*n*=188	Welch *F*	ω^2
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*		
Age	39.38	13.10	36.49	13.03	33.81	11.89	33.81	9.24	9.28*	.03

*p< .01

Post hoc tests (as shown in Table 9.3) showed that problem gamblers (mean age=33.81 years, SD=9.21) and moderate-risk gamblers (mean age=33.81 years, SD=11.89) were significantly younger than non-problem gamblers (mean age=39.38 years, SD=13.10). The significant effect sizes were .44 and .49, respectively

Table 9.3

Post hoc results for age by gambling category

Gambling category[a]	Mean	Mean differences (effect sizes are indicated in parentheses)			
		1	2	3	4
1. NPG	39.38	-			
2. LR	36.49	2.88 (.22)	-		
3. MR	33.81	5.56* (.44)	2.68 (.21)	-	
4. PG	33.81	5.62* (.49)	2.74 (.24)	.06 (0)	-

Note. NPG= non-problem gambler; LR= low-risk gambler; MR= moderate-risk gambler; PG= problem gambler

*p<.001

Chi-square tests were conducted and adjusted residuals' z scores of ± 2 were examined for statistical significance to compare socio-demographic data, excluding age, with gambling severity categories (Table 9.4).

After controlling for familywise error by adjusting *p*-values using Bonferroni correction (Bonferroni corrected significant level=.006), there was no significant difference between sex and problem gambling categories, ($\chi^2(3)=17.23$, $p=.008$). In addition, there was no significant difference between relationship status and problem gambling categories ($\chi^2(6)=14.78$, $p=.02$).

Significant differences were found between those of different work status ($\chi^2(15)=37.71$, $p<.001$). Problem gamblers were more likely to work full-time ($Z=3.9$), retired participants were most likely to be non-problem gamblers ($Z=2.6$), and students were more likely to be at low-risk of problem gambling ($Z=2.1$)

Table 9.4

Socio-economic statistics for sports bettors (n=634)

	All	Non-problem	Low-risk	Moderate-risk	Problem	χ^2 (*df*)
Gender						17.23 (3)
Female	114 (18.0%)	31 (27.2%)	20 (17.5%)	14 (12.3%)	49 (43.0%)	
Male	519 (81.9%)	161 (31.0%)	127 (24.5%)	92 (17.7%)	139 (26.8%)	
Education						16.31 (15)
GCSE or equivalent	92 (14.5%)	32 (34.8%)	22 (23.9%)	17 (18.5%)	21 (22.8%)	
A-level or equivalent	136 (21.5%)	47 (34.6%)	34 (25.0%)	25 (18.4%)	30 (22.1%)	
Vocational qualification	35 (5.5%)	12 (34.3%)	4 (11.4%)	6 (17.1%)	13 (37.1%)	
University degree	224 (35.4%)	65 (29.0%)	53 (23.7%)	35 (15.6%)	71 (31.7%)	

	Postgraduate degree	127 (20.0%)	30 (23.6%)	27 (21.3%)	21 (16.5%)	49 (38.6%)	
	Other		5 (27.8%)	6 (33.3%)	3 (16.7%)	4 (22.2%)	
Occupation							37.71* (15)
	Student	65 (10.3%)	20 (30.8%)	22 (33.8%)	13 (20.0%)	10 (15.4%)	
	Working full-time	436 (66.8%)	130 (29.8%)	87 (20.0%)	69 (15.8%)	150 (34.4%)	
	Working part-time	47 (7.4%)	11 (23.4%)	10 (21.3%)	9 (19.1%)	17 (362%)	
	Not working	23 (3.6%)	7 (30.4%)	6 (26.1%)	4 (17.4%)	6 (26.1%)	
	Retired	29 (4.6%)	15 (51.7%)	8 (27.6%)	3 (10.3%)	3 (10.3%)	
	Other	34 (5.4%)	9 (26.5%)	14 (41.2%)	9 (26.5%)	2 (5.9%)	
Relationship status							14.78 (6)
	Single	218 (34.4%)	57 (26.1%)	57 (26.1%)	49 (22.5%)	55 (25.2%)	
	Married/CP and/or living with partner	368 (58.0%)	121 (32.9%)	81 (22.0%)	50 (13.6%)	116 (31.5%)	
	Divorced or separated	38 (6.0%)	13 (34.2%)	5 (13.2%)	5 (13.2%)	15 (39.5%)	

*Significant at the Bonferroni corrected level of p=.006

9.4.4 Method of bet placement

Participants were asked to indicate how they placed their sports bets. Online with a bookmaker was the most commonly used method of bet placement, with 395 (62.3%) participants indicating that they had placed a bet this way (Table 9.5). The second most popular way to place a bet was on a betting exchange, with 220 (34.7%) participants indicating that they had placed a bet this way.

Table 9.5

Frequency of endorsement for bet placement methods

How do you place your bets?	Yes *N* (%)
Online with a bookmaker	395 (62.3%)
On a betting exchange	220 (34.7%)
In-person at the bookmakers	161 (25.4%)
On the phone to the bookmakers	56 (8.8%)
In-person at the venue	36 (5.7%)
Somewhere else/another way	36 (5.7%)

Note. Participants were able to endorse more than one item

The majority of participants indicated that they used more than one platform to place sports bets. Therefore, LCA was used to classify homogenous subgroups of sports bettors by distinctive gambling patterns based on the profile of the mode/s that individuals use to bet. Seven latent class models were fitted to the data. The goodness-of-fit indices indicated that the five-class solution was the best fitting model (see Table 9.6). More specifically, the AIC and SSABIC was markedly lower for the five-class solution compared to earlier models, and the SSABIC increased in the six-class solution indicating that the five-class model represents the ultimate number of classes (Williams & Kibowski, 2016). The entropy measure (.98) indicated that there was a 98% probability of being able to successfully classify participants into one of five latent classes (Masyn, 2013).

Table 9.6

Fit indices for a one-class model through to a seven-class model

Model	Log	Free parameters	LR χ^2 *p*	AIC	BIC	SSABIC	LRT *p*	Entropy
Two classes	-1740.52	13	250.32 (50) 0.00	3507.04	3564.92	3523.64	74.66 0.00	.56
Three classes	-1702.55	20	174.34 (43) 0.00	3445.10	3543.14	3470.64	75.62 0.00	.88
Four classes	-1669.47	27	108.22 (36) 0.00	3392.93	3513.14	3427.42	64.73 0.00	.97
Five classes	**-1654.08**	34	**77.44 (29) 0.00**	3376.16	3527.53	**3419.58**	30.11 0.00	**.98**
Six classes	-1643.10	41	55.49 (22) 0.00	3368.20	3550.74	3420.47	27.10 0.03	.98
Seven classes	-1633.04	48	35.36 (15) 0.00	3362.08	3575.78	3423.38	25.87 0.05	.95

LRχ^2, Likelihood Ratio Chi-square; AIC, Akaike Information Criteria; BIC, Bayesian Information Criteria; SSABIC, Sample-Size Adjusted Bayesian Information Criteria; LRT–LMR, *p*-value for the Lo-Mendell-Rubin Likelihood Ratio Test. Indicators that support the best-fitting model in bold type.

The posterior probabilities for the five-class model are shown in Table 9.7.

The largest class was Class 1 (n=206, 32.5%). This group was categorised by a high probability of placing bets online with a bookmaker and low probability of placing bets in any of the other ways. This group was named ‘online sports bettors’. Class 2 (n=80, 12.6%) contained sports bettors that predominantly used offline methods to place their bets. This group was categorised by some probability of them placing bets over the telephone, at venues, and high-street bookmakers. This group did not place any bets using online methods (i.e., online bookmakers or a betting exchange). Therefore, this group was called ‘multi-mode offline sports bettors’. On the other hand, Class 3 (n=174, 27.4%) showed a preference for placing their sports bets using an online bookmaker, but there was also some probability of them placing a bet using a betting exchange. As a result, this group was called ‘multi-mode online sports bettors’.

Class 4 (n=150, 23.7%) differed from the other groups as they placed bets both online and offline. There was a high probability of this group placing bets in-person at a venue and online with a bookmaker, and there was some probability that they use a betting exchange to place their bets, and place bets in-person at a high-street bookmakers. Therefore, this group was called ‘mixed mode sports bettors’. Class 5 (n=23, 3.6%) was the smallest class and was characterised by a high probability of placing a bet ‘somewhere else/another way’ with a low probability of placing bets via another method. This group was named ‘other sports bettors’.

Table 9.7

Probability of saying “yes” to each item

How do you place your bets?	Online sports bettors	Multi-mode offline sports bettors	Multi-mode online sports bettors	Mixed-mode sports bettors	Other sports bettors
Online with a bookmaker	1.00	.00	.41	.77	.23
On a betting exchange	.00	.00	1.00	.31	.00

In-person at the venue	.00	.14	.00	1.00	.07
On the phone to the bookmakers	.04	.34	.05	.08	.00
In-person at the bookmakers	.00	.44	.13	.23	.00
Somewhere else/another way	.00	.00	.05	.03	1.00

A secondary analysis using a chi-square test was conducted and adjusted residuals' *z* scores of ± 2 were examined for statistical significance to compare gambling platform subgroups with gambling risk categories (Table 9.8). After controlling for familywise error by adjusting *p*-values using Bonferroni correction (Bonferroni corrected significant level $p<.001$), a significant difference was found between mode of bet placement and problem gambling category, ($\chi^2(12)= 80.17$, $p<.001$).

Table 9.8

Platform subgroup and problem gambling categories (n= 633)

	All	Non-problem	Low-risk	Moderate-risk	Problem	χ^2 (*df*)
Mode						80.17(12)*
Online sports bettors	206 (32.5%)	79 (41.1%)	57 (38.8%)	35 (32.7%)	35 (18.6%)	
Multi-mode offline sports bettors	80 (12.6%)	21 (10.9%)	6 (4.1%)	3 (2.8%)	50 (26.6%)	
Mixed- mode sports bettors	150 (23.7%)	26 (18.8%)	27 (18.4%)	32 (29.9%)	55 (29.3%)	
Multi-mode online sports bettors	174 (27.4%)	51 (26.6%	50 (34.0%)	30 (28.0%)	43 (22.9%)	

Other	23 (3.6%)	5 (2.6%)	7 (4.8%)	7 (6.5%)	4 (2.1%)

*Significant at the Bonferroni corrected level of *p*=.01

Adjusted residuals in the contingency table with a z score higher than 2 showed that non-problem gamblers were the group most likely to be categorised in the online sports bettors class (Z=2.1), while problem gamblers were least likely to be categorised in the online sports bettors class (Z=-4.8). Problem gamblers were most likely to be categorised as multi-mode offline sports bettors (Z=6.9) and mixed mode sports bettors (Z=2.2). In addition, both low-risk gamblers (Z=-2.9) and moderate-risk gamblers (Z=-3.4) were least likely to be classified as multi-mode offline sports bettors.

9.4.5 Reasons for gambling

9.4.5.1 Reasons for Gambling Questionnaire Item Endorsement

Table 9.9 presents the rate of endorsements for each of the reasons for gambling (RGQ; Wardle et al., 2011b) items. The five most commonly endorsed reasons for sports betting were for fun (94%), followed by for excitement (91%), to make money (89%), the chance of winning big money (89%), and the sense of achievement from winning (82%)

Table 9.9

Responses to RGQ items

Item		Response[a]				
Please state whether these are reasons why you take part in sports betting	N	Never	Sometimes	Often	Always	Any endorsement
Because it's fun?	631	6.3	33.3	35.5	24.9	93.7
Because it's exciting?	631	8.7	32.0	40.3	19.0	91.3
To make money?	631	10.7	30.3	29.2	30.0	89.3
For the chance of winning big money?	631	11.2	36.3	30.0	19.7	88.8

Because of the sense of achievement when I win	631	17.8	30.3	33.9	17.9	82.2
As a hobby or past-time?	631	22.4	33.0	29.8	14.6	77.6
To escape boredom or to fill my time?	631	30.9	36.6	20.9	11.6	69.1
Because it's something that I do with my friends or family?	631	33.3	33.1	24.1	9.4	66.7
For the mental challenge or to learn about the game or activity?	631	33.4	28.2	27.3	11.1	66.6
To be sociable?	631	43.4	31.1	18.5	7.0	56.6
To relax?	631	46.1	27.3	20.6	6.0	53.9
To compete with others (e.g., bookmakers, other gamblers)	631	52.4	21.9	16.3	9.2	47.6
Because I'm worried about not winning if I don't play?	631	59.9	20.6	12.0	7.3	40.1
Because it helps when I'm feeling tense	631	62.0	19.2	12.8	5.9	38.0
To impress other people	631	64.4	16.0	14.4	5.1	35.6

[a]All numbers are shown as percentages

A principal component analysis was conducted on the RGQ data to determine the factor structure for the present sample of international sports bettors. A PCA was conducted in order to reduce the number of variables while retaining as much of the original variance as possible (Conway & Huffcutt, 2003). A PCA was conducted on the 15 items with oblique rotation (direct oblimin). A direct oblimin rotation was used because substantial correlation between factors was expected. The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the

analysis, KMO=.87 ('meritorious' according to Hutcheson & Sofroniou, 1999). KMO values for individual items were greater than .60, which is well above the acceptable limit of .50 (Field, 2013). Bartlett's test of Sphericity was estimated at 3870.74, df=105, p <.001, indicating that correlations between items were sufficiently large for principal component analysis (Field, 2013). An initial analysis was run to obtain eigenvalues for each factor in the data. Four factors had eigenvalues over Kaisers criterion of 1 and explained 65.8% of the variance. However, these factors did not demonstrate a logical structure. Therefore, the factor analysis was re-run using five factors instead of four. The fifth factor, which had an eigen value of 0.78 was included. To incorporate the effect of sample variance, Jolliffe (2002) suggests that the appropriate number to retain are those eigen values which exceed .7. The additional fifth factor explained 5.17% of the total variance and was included in the final factor structure. After the rotation, there were five factors that explained 70.99% of the variance (Table 9.10). Questionnaire items were included in a factor if their loading correlation coefficient was ≥.4 (Field, 2013).

Table 9.10

Five-factor solution to the exploratory factor analysis

Item	Factor loadings[a]				
How often do you take part in sports betting	1 Winning	2 Social	3 Affect regulation	4 Pleasure	5 Mastery
For the chance of winning big money?	.810				
To make money?	.88				
Because of the sense of achievement when you win?	.42				
Because it's something that you do with your friends or family?		.91			

To be sociable?	.78			
To relax?		.63		
To escape boredom or to fill your time?		.83		
Because you're worried about not winning if you don't play?		.72		
Because it helps when you're feeling tense?		.71		
To impress other people?		.56		
Because it's fun?			.80	
Because it's exciting?			.71	
As a hobby or a past-time?				.87
For the mental challenge or to learn about the game or activity?				.67
To compete with others (e.g., bookmakers, other gamblers)?				.45

[a] Loadings less than .4 are not shown

The final factor groupings are described below:

Factor 1- Winning. This factor is similar to that of Wardle et al. (2011b) and Francis et al. (2015) because it contained two items relating to monetary reasons for gambling (money in the BGPS). However, this factor also contained the item relating to a sense of achievement from winning. Therefore, this item was labelled winning.

Factor 2- Social. This factor includes gambling to be social, or as something that is done with friends and family. These items are the same as those identified by the UK BGPS study (Wardle et al., 2011b) and an Australian study (Francis et al., 2015) (social in the BGPS).

Factor 3- Affect regulation. This factor includes gambling to relax, escape boredom, relieve tension, impress others, and due to worries about not winning if not gambling. These items were similar to those identified by Wardle et al. (2011b) in the BGPS coping factor which includes gambling to impress others or relieve tension. The present study also found items 'to relax', 'to escape boredom' (recreation in the BGPS) and 'worried about not winning if you don't play' (not loaded in the BGPS) to load onto the affect regulation item. This factor has been previously identified as a gambling motive by Barrada et al. (2019). Barrada et al. (2019) termed this factor affect regulation because some positive and some negative reinforcement-based motives were grouped together. Barrada et al. (2019) argued that coping is the customarily used term to designate the regulation of negative affect, whereas the label affect regulation can be use to denote not only coping, but also positive affect upregulation. The study by Barrada et al. (2019) used both the RGQ and the Gambling Motives Questionnaire–Financial (GMQ-F; Denchant, 2014). They identified similar items from the RGQ questionnaire for their affect regulation factor, including to escape boredom, to relax, because it helps when I'm feeling tense, and to impress other people.

Factor 4- Pleasure. This includes gambling to increase positive emotions including excitement (enhancement in the BGPS) and fun (recreation in the BGPS). According to Chantal et al. (1995), individuals who have intrinsic gambling motivations bet for excitement and fun, resulting in satisfaction and pleasure. Therefore, this factor has been labelled pleasure.

Factor 5- Mastery. This factor was labelled mastery because it related to learning, personal development and competition with others. This factor included items: as a hobby of past time (recreation in the BGPS), for the mental challenge or to learn about the activity (enhancement in the BGPS), and to compete with others (enhancement in the BGPS).

A Cronbach's alpha reliability analysis was conducted to examine the extent to which participants were responding consistently to items relating to each of the extracted factors.

None of the sub-scales would have improved internal consistency with the removal of items. The lowest alpha was .64 for the 'winning' factor. The remaining alphas were: 'social'= .79, 'pleasure'= .66, 'mastery'= .68, and 'affect regulation'= .81. Values with an α between .6 and .7 indicate an acceptable level of reliability (Field, 2013).

As with reasons for gambling in the BGPS (Wardle et al., 2015) and as employed by Francis et al. (2015), summary scores for each factor were calculated for each participant. The scores for each factor were standardized so that each factor had a mean of 0 and a standard deviation of 1. A positive mean score factor indicates that the reason for gambling is endorsed more than average, while a negative mean score indicated that the factor is endorsed less often than average. Mean factor scores were then used to determine if gambling motives differed by socio-demographic characteristics and gambling severity. One-way ANOVAs were conducted to compare whether these reasons for gambling differed between problem gambling severity categories.

9.4.5.2 Factor score comparisons by population subgroups

Table 9.11 shows that mean factor scores varied by age. For example, younger gamblers were more likely to report that they gambled for all the reasons (winning, social, affect regulation, pleasure and mastery). The older group (55+ years) were less likely to gamble for social reasons. There was also a variation in in mean factor scores based on gender. Female bettors were more likely to report gambling for social or affect regulation reasons than male bettors.

When the mean factor scores were examined by marital status, those who were single were more likely to report gambling for winning reasons than all other groups. Those who were married or lived with a partner were more likely to sports bet for social, affect regulation, and mastery reasons. There was also a variation in the mean scores for winning reasons based on economic activity. Those who were unemployed or working part-time were much more likely to report that they gambled for money/winning reasons whereas those who are working (either full- time or part-time) endorsed gambling for social, affect regulation, pleasure and mastery motivations. Those who were retired were the least likely to report gambling for social motivations. However, they were the group to endorse gambling for mastery reasons the most.

Mean factor scores also varied by level of education. Those who had either an undergraduate degree or postgraduate degree were more likely to report gambling for pleasure and social

reasons than those without these qualifications. In addition, those with a postgraduate qualification displayed the most pronounced standardised score for mastery reasons.

Wardle et al. (2011b) compared regular gamblers (i.e., those who gambled at least once a month in the previous year) to those who were not regular gamblers (i.e., those who had gambled less than monthly in the previous year). The present comparison between regular in-play sports bettors and non-regular in-play sports bettors was based on the comparison of standardised summary scores. Results showed that regular in-play sports bettors had positive mean scores for four out of the five reasons gambling: winning, affect regulation, pleasure, and mastery. Non- regular in-play sports bettors were more likely to endorse gambling due to social reasons and there was a strong negative endorsement for mastery reasons.

Table 9.11

Mean factor scores, by socio-demographic characteristics

Socio-demographic characteristics	Winning	Social	Affect regulation	Pleasure	Mastery
Sex					
Male	-.02	-.05	-.06	-.01	.00
Female	.08	.24	.26	.05	-.01
Age group					
18-34	.14	.16	.12	.98	.03
35-54	-.11	-.08	-.08	-.09	-.02
55+	-.30	-.52	-.33	-.17	-.07
Marital status					
Single	.10	-.15	-.10	.01	-.08
Married/CP and/or living with partner	-.06	.05	.03	-.01	.04

Divorced or separated	-.13	-.60	-.02	-.33	-.20
Employment status					
Student	-.03	.01	-.28	-.05	-.34
Working full-time	-.20	.09	.13	.07	.09
Working part-time	.25	.04	.05	.04	.04
Not working	.54	-.31	-.39	-.27	-.62
Retired	-.22	-.54	-.22	-.24	.32
Highest level of education					
GCSE or equivalent	-.07	-.20	-.13	-.08	-.18
A-level or equivalent	-.05	-.08	-.21	.25	-.15
Vocational qualification	.02	.01	-.01	.07	.06
University degree	-.08	.11	.22	-.10	-.01
Postgraduate degree	.07	.21	.30	-.01	.23
Non regular in-play bettors	-.24	.06	-.47	-.06	-.51
Regular in-play bettors	.03	-.01	.07	.01	.07

The results of series of one-way ANOVAs showed that there was a significant difference in winning, affect regulation, mastery, and social motivations between problem gambling severity

categories, while there was no significant difference for pleasure motivations (Table 9.12). Overall, problem gamblers were significantly more likely to endorse the four aforementioned motives than the other gambling severity categories.

Table 9.12

Mean factor scores, by gambling severity category

	Non-problem gambler			Low-risk gambler			Moderate-risk gambler			Problem gambler				
	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	Welch F	ω^2
Winning	192	-.44	1.02	147	-.11	.94	107	.41	.85	188	.30	.92	26.81*	.11
Social	192	-.25	.98	147	-.42	.80	107	.08	.98	188	.54	.92	39.68*	.15
Affect regulation	192	-.56	.62	147	-.50	.64	107	-.07	.91	188	1.00	.81	167.06*	.45
Pleasure	192	-.07	1.05	147	-.01	1.01	107	.16	1.05	188	-.01	.90	1.12	.001
Mastery	191	-.43	.90	147	-.08	.94	107	-.04	1.07	188	.51	.87	36.60*	.13

**Significant at the Bonferroni corrected level of p=.01

There was a significant difference between problem gambling severity and winning motivation for gambling, F(3, 630)=26.81, p<.001. The estimated omega squared (ω^2=.11) indicated that approximately 11% of the total variation in average score of gamblers motivation of gambling to win is attributable to differences between problem gambling severity category. Post hoc comparisons, using the Games-Howell post hoc procedure, were conducted to determine which of the gambling severity categories differed significantly. The results are given in Table 9.13 and indicate that problem gamblers (M=6.77, SD=1.67) had a significantly higher average score on the measure of winning motives than low-risk gamblers (M=6.04, SD=1.68) and non-problem gamblers (M=5.45, SD=1.83). The significant effect size was .76. Additionally, moderate-risk gamblers scored significantly higher than low-risk gamblers and non-problem gamblers, with effect sizes of .58 and .90, respectively. Low-risk gamblers also had significantly winning motivation scores than non-problem gamblers, with an effect size of .34. There was no significant difference between moderate-risk gamblers and problem gamblers.

There was a significant difference between gambling severity category and gambling for social reasons, F(3, 630)=39.68, *p*<.001. The estimated omega squared (ω^2=0.15) indicated that 15% of the total variation in the social motive was attributable to problem gambling severity. Post hoc comparisons indicated that problem gamblers (M=3.77, SD=1.23) had a significantly higher social motivation score than moderate-risk gamblers (M=3.15, SD=1.30), low-risk gamblers (M=2.48, SD=1.06), and non-problem gamblers (M=2.71, SD=1.30). The effect sizes for these three significant effects were 0.48, 1.12, and 0.84, respectively. Moderate-risk gamblers average score was significantly higher than low-risk and non-problem gamblers with significant effect sizes of 0.56 and 0.34. There was no significant difference between low-risk gamblers and non-problem gamblers.

There was a significant difference between affect regulation motives for sports betting and gambling category, F(3, 630)=167.06, *p*<.001. The estimated omega squared (ω^2=.45) indicated that approximately 45% of the total variation in average score of gamblers motivation of affect regulation is attributable to differences between problem gambling severity category. Problem gamblers (M=10.81, SD=2.59) scored significantly higher than moderate-risk gamblers (M=7.38, SD=2.90), low-risk gamblers (M=6.04, SD=2.04) and non-problem gamblers (5.82, SD=1.99). The significant effect sizes were 1.25, 1.17, and 2.16, respectively. Moderate-risk gamblers also score significantly higher on affect regulation motives than low-

risk and non-problem gamblers, with effect sizes of .54 and .61. There were no significant differences in affect regulation motives between low-risk and non-problem gamblers.

There was a significant difference between mastery motivations for gambling and gambling severity category, $F(3, 629)=36.60$, $p<.001$. The estimated omega squared ($\omega^2=.13$). Problem gamblers (M=6.11, SD=1.63) scored significantly higher on mastery motives than moderate-risk gamblers (M=5.07, SD=2.00), low-risk gamblers (M=5.00, SD= 1.77) and non-problem gamblers (M=4.34, SD=1.68). The effect sizes for these three significant effects were .57, .65, and 1.07, respectively. Moderate-risk gamblers and low-risk gamblers scored significantly higher than non-problem gamblers, with significant effect sizes of .40 and .38. There was no significant difference between moderate-risk gamblers and low-risk gamblers.

Table 9.13

ANOVA post hoc comparisons of reasons for gambling

	Mean	Mean differences (effect sizes are indicated in parentheses)			
Winning		1	2	3	4
1. NPG	5.45	-			
2. LR	6.03	-.59* (.34)	-		
3. MR	6.97	-1.52** (.90)	.93** (.58)	-	
4. PG	6.77	-1.32** (.76)	-.73** (.44)	.20 (.12)	-
Social					
1. NPG	2.71	-			
2. LR	2.48	.23 (.19)	-		
3. MR	3.15	-.43* (.34)	-.67** (.56)	-	
4. PG	3.77	-1.23** (.84)	-1.29** (1.12)	-.62** (.48)	-
Affect regulation					
1. NPG	5.83	-			
2. LR	6.04	-.21 (.10)	-		
3. MR	7.38	-1.55** (.61)	-1.34** (.53)	-	
4. PG	10.81	-.98** (2.16)	-4.77** (1.17)	-3.43** (1.25)	-
Pleasure					
1. NPG	4.05	-			
2. LR	4.13	-.07	-		
3. MR	4.32	-.27	-.19	-	
4. PG	4.13	-.08	-.00	.19	-
Mastery					
1. NPG	4.34	-			
2. LR	5.00	-.66** (.38)	-		
3. MR	5.07	-.72** (.40)	-.07 (.00)	-	
4. PG	6.11	-1.77** (1.07)	-1.11** (.65)	-1.04** (.57)	-

Note. NPG- non-problem gambler; LR- low-risk gambler; MR- moderate-risk gambler; PG- problem gambler

*p<0.05, **p<.001

9.5 Discussion

The aim of the present study was to: (i) explore the socio-demographic characteristics of a sample of international sports bettors; (ii) use LCA to characterise variations in sports betting platforms; (iii) explore the utility of adapting a standardised measure of gambling motives to a sample of international sports bettors and; (iv) determine whether motivations for sports betting differ according to population subgroups and gambling categories. The present study highlighted that problem sports bettors were more likely to be younger and working full-time. It also indicated the most prevalent gambling motives of sports bettors. To the best of the author's knowledge, this is the first LCA study to classify sports bettors based on the combinations of modes of access that they use for sports betting. The LCA identified the following five gambling classes: online sports bettors, multi-mode online sports bettors, multi-mode offline sports bettors, mixed mode sports bettors, and other.

9.5.1 Socio-demographics and problem gambling

The present study sought to examine the relationship between socio-demographic characteristics and their association (if any) with problematic gambling among sports bettors. The majority of sports bettors in the present sample were male (82%). This aligns with previous findings that sports bettors are typically male (LaBrie et al., 2007; Wood & Williams, 2011). For example, two large studies reported that more than 90% of online sports bettors were male (LaBrie et al., 2007; Wood & Williams, 2011). The average age of males in the present sample was 36.94 years (SD=12.44), with ages ranging from 18 to 69 years, which is slightly older than findings from prevalence surveys indicating that sports bettors were typically young adult males aged 18 to 34 years (Humphreys & Perez, 2012; Wardle & Seabury, 2012).

The percentage of problem gamblers among the total sample of sports bettors (29.7%) was substantially higher than those found in previous studies. Although, the survey comprises of self-selected participants and is no way representative of problem sports betting in the general population. For example, in a study of 659 Spanish sports bettors, 19% of the sample were categorised as problem gamblers, which the authors observed was higher than typically found in gambling studies (Lopez-Gonzalez et al., 2019a). Although, as Lopez-Gonzalez et al. (2019a)

note, the sample consisted only of gamblers therefore potentially inflating observed prevalence rates. This rationale is applicable to the present study, as participants had to have placed at least one sports bet in the previous year in order to be eligible to take part. Additional analysis indicated that out of the participants recruited using Facebook and gambling forums, 26.4% were categorised as problem gamblers, whereas, 39.4% of the participants recruited using MTurk (n=160, 25.2%) were problem gamblers. Previous research has found that online crowdsourcing platforms offer access to populations with high proportions of problem gamblers (Mishra & Carleton, 2017; Pickering & Blaszczynski, 2021). As a result, the present sample is not necessarily representative of gambling behaviours among more general populations.

Two demographic risk factors for problem gambling were identified in the present sample: (i) being younger; and (ii) working full-time. Those categorised as problem gamblers in the present study tended to be younger in age. These results partially support earlier research findings that young adult males are an at-risk group for problem gambling (Delfabbro, 2012; Hing et al., 2016a; Russell et al., 2019a; Williams et al., 2012a). However, the present study did not identify any significant differences between gender and the likelihood of being a low-risk gambler, moderate-risk gambler or problem gambler. Despite this lack of statistical significance, the large proportion of female bettors in the problem gambling category (43.0% of females but only 26.8% of males) mirrored the findings of Lopez-Gonzalez et al. (2019a). Similarly, a study by McCarthy et al. (2018) found that over one third of female sports bettors could be classified as problem gamblers (39.3%). These findings support previous research which has called for more exploration into women experiencing sports betting problems (Hing et al., 2018; McCormack et al., 2014).

The risk of problem gambling was elevated amongst sports bettors working full-time. This is consistent with previous findings that sports bettors experiencing gambling problems tend to be working full-time in professional occupations and earning above average salaries (Hing et al., 2016a; Russell et al., 2019a). These occupational positions provide them with more disposable income to gamble (Hing et al., 2016a). Some studies have found that being a university degree educated sports bettor is associated with problem gambling (e.g., Russell et al., 2019b). However, the present study did not find education to be a risk factor for problem gambling.

The present study found no evidence of an association between marital status and problem gambling. Prior research surrounding the relationship between problem gambling and marital status have so far been mixed. For example, one study by Hing et al. (2016a) suggested that being married was a risk factor for experiencing gambling-related problems among sports bettors, while others have found that being single is a risk factor for being a moderate-risk or problem gambler (Russell et al., 2019a).

9.5.2 Sports betting mode and problem gambling

This part of the present study sought to explore the relationship between the type of platform used to place sports bets and their association with problematic gambling among sports bettors. The LCA identified five subtypes of gambling platform users, which were labelled online sports bettors, multi-method offline sports bettors, multi-method online sports bettors, mixed mode gamblers, and other. The online sports bettors subgroup was the largest, and consisted of just under one third of participants (32.5%). This subgroup was the most likely to consist of non-problem gamblers. Categorisation into two of the other subgroups: multi-method offline sports bettors (those who placed bets over the telephone, at high-street bookmakers, and at venues), and mixed mode sports bettors (those who placed bets using online bookmakers and in-person at venues) were the groups most likely to consist of problem gamblers.

A large amount of gambling research has taken online gamblers to be a homogenous group without considering that a large proportion of them also gamble offline (Blaszcznski et al., 2016; Wardle et al., 2011a). A strength of this study was that it considered the different bet placement modes used by sports bettors. The findings align with previous research that has reported that 'mixed mode' gamblers demonstrate higher problem gambling severity scores than exclusive land-based and online gamblers (Blaszczynski et al., 2016; Gainsbury et al., 2015d; Papineau et al., 2018; Wardle et al., 2011a). Mixed mode gambling has also been found to be a predictor of both at-risk and problem gambling in adolescents (González-Roz et al., 2017). Gainsbury et al. (2015d) reported that mixed mode gamblers in addition to having the highest average problem gambling severity scores, were more likely to engage in multiple forms of gambling, and attribute gambling problems to sports betting more than any other group (i.e., internet gamblers and land-based gamblers). It has been suggested that the relationship between 'mixed mode' gambling, and at-risk gambling and problem gambling may be due to diverse and heighten levels of participation among these groups (Blaszczynski et al.,

2016, Gainsbury et al., 2015d; Wardle et al., 2011a). Due to the additional effort that it takes to access venues rather than placing sports bets online, online sports bettors who gamble in-person are likely to be more intensely involved in this activity (Gainsbury et al., 2019).

As online sports betting has become more common, some studies have suggested that online gambling may be more problematic for vulnerable individuals due to its structural and situational characteristics such as availability, accessibility, affordability, convenience, and anonymity (McCormack & Griffiths, 2013). Although placing sports bets online was the most commonly used platform for sports bettors in the current sample, the findings indicated that individuals who place their bets exclusively online are likely to be non-problem gamblers.

While those who bet using multiple methods (offline multi-mode gamblers and mixed mode gamblers) were more likely to be categorised as problem gamblers, an interesting finding is that individuals who used online bookmakers and betting exchanges did not fall into this category. Betting exchanges are where individuals bet directly with each other (peer-to-peer betting) (Koning & Velzen, 2009), rather than through a bookmaker. Benefits of using exchanges include better odds and lower transaction costs for consumers (Koning & Velzen, 2009). Although the popularity of betting exchanges has grown considerably in the past ten years, little research has examined the characteristics of this particular group of internet gamblers, and the relationship, if any, with problem gambling behaviour. It is sometimes argued that bettors can be grouped into two categories, professional and recreational (e.g., Coleman, 2004; Gulati & Shetty, 2007). Recreational bettors are often driven by emotional factors, such as a passion for sports or the excitement of betting. On the other hand, professional bettors consider betting as a profitable activity (Andersson & Nilsson, 2015). Qualitative research of recreational and professional poker players by McCormack and Griffiths (2012) reported that professional poker players were more disciplined in their gambling behaviour and treated their poker playing as work. As a result, they were less likely to take risks or chase losses, and they were more controlled in their betting behaviour. It is possible that the multi-mode online sports bettors subclass includes gamblers that see themselves as professional sports bettors, and they are therefore more controlled in their betting compared to the other groups. More research is required to support this assumption.

9.5.3 *Motivations for sports betting and problem gambling*

The present research sought to explore how motivations for sports betting vary among different population subgroups, and whether these motivations are associated with problematic gambling among sports bettors. Sports betting has been previously explained by social, excitement and money motivated reasons (Abarbanel, 2014; Balodis et al., 2014; Fang & Mowen, 2009; Lam, 2007; Sundqvist et al., 2016). The present study identified that the most popular reasons endorsed for sports betting were for fun, for excitement, to make money, for the chance of winning big money, and the sense of achievement from winning. Gambling to release tension, to compete with others, and to impress others were the least commonly endorsed items by the respondents in the study, which was consistent with findings by Francis et al. (2015) and Wardle et al. (2011b).

A principal component analysis, using findings from the adapted BGPS, identified five factors relating to motivations for sports betting: winning, social, affect regulation, pleasure and mastery. The five derived factors bear some resemblance to the reasons identified as to why individuals gamble by Wardle et al. (2009, 2011b): monetary reasons, social reasons, challenge, positive feelings, and regulation of internal states.

The findings of the present study showed a five-factor structure that is slightly different from that derived from the BGPS. In the present study, the social factor was the same as identified in the BGPS, but the factor analysis employed in the present study grouped items into winning (which included items from the money factor in the BGPS), affect regulation (which included items from coping and recreation factors in the BGPS), pleasure (which included items from the enhancement and recreation factors in the BGPS) and mastery (which included items from the recreation and enhancement factors in the BGPS).

The motive that was found to differ most significantly from the RGQ factors was affect regulation. This factor contained items from the BGPS which were included in the coping (e.g., 'because it helps when I'm feeling tense' and recreation ('to escape boredom') factors. Similar to Barrada et al. (2019), as this factor contained items relating to both positive and negative-based reinforcement motives, it was labelled affect regulation. Barrada et al. (2019) argued that affect regulation can be used to denote not only coping, but also positive affect upregulation. They found this factor to be the only direct predictor of disordered gambling (measured using the South Oaks Gambling Screen; SOGS, Lesieur & Blume, 1987).

There are two possible explanations for the differences in the factor structure in the present study and the BGPS. Firstly, the present study specifically asked about individuals' motivations to engage in sports betting, while the BGPS asked about the reasons for engaging in all forms of gambling. Secondly, the BGPS used a British sample, whereas the present study included a sample of international sports bettors. Although the differences in the factor structures between the two studies are minor, and similar to findings from an Australian study by Francis et al. (2015), the results indicate that the factor structure from RGQ cannot simply be transferred to a new gambling activity or a new population.

Like the BGPS, the data from this study suggest that gambling motives vary according to socio-demographic characteristics, such as sex, age, marital status, employment and highest educational qualification. The subgroup analysis in the present study showed that women were more likely to endorse sports betting for social or affect regulation reasons than men. These results differ from Wardle et al. (2011b) who reported that male and female gamblers were equally likely to report that they gambled for social reasons and that men were more likely to report that they gambled for affect regulation reasons. However, other studies have previously found that women are more likely to gamble to regulate their mood or escape from negative emotions (Lloyd et al., 2010; Wenzel & Dahl, 2009). Potenza et al. (2016) suggested that identifying specific motivational influences involved in the progression from recreational to problematic gambling for men and women, gained through longitudinal studies, would be important in progressing gender-orientated prevention

The youngest gambling age group (18-34 years old) displayed the most pronounced standardised score for all of the motivations in comparison with the other age categories. Wardle et al. (2011b) found that older gamblers were more likely than young gamblers to report gambling for monetary or recreation reasons. One reason for the differing results may be due to the fact that we asked participants about their sports betting motivations, rather than motivations for gambling in general, and sports bettors typically tend to be younger in age.

There were some clear differences between education status and gambling motives, and those with a university degree were more likely to endorse sports betting for social and affect regulation reasons. Individuals with a postgraduate degree were likely to report high rates of endorsement for mastery reasons, as did participants who were retired. Numerous studies have found mastery to be a driver for other forms of gambling (Binde, 2013; Canale et al., 2015b; Wardle et al., 2011b). However, one study by Parke et al. (2018) did not find mastery to be

associated with sports betting, and it was higher among poker players than those who engaged in other gambling activities. On the other hand, Sundqvist et al. (2016), found mastery to be a motive to gamble for forms of gambling that comprised an element of skill including sports betting, horse race betting, and poker.

The present study found that those categorised as problem gamblers were significantly more likely to endorse sports betting for winning, social, affect regulation and mastery reasons. However, there was no significant difference between pleasure motivations and gambling severity categories. Previous research has found problem gambling to be significantly associated with coping, financial and enhancement motives, but not with social motives (Barrault et al., 2019; Lam, 2007; Lee et al., 2007; Mathieu et al., 2018; Stewart & Zack; 2008). However, the present study found that gambling for social reasons was significantly higher for problem gamblers and moderate-risk gamblers. One potential explanation for this is that sports betting often takes place in social environments, such as at pubs, at friend's houses, or while watching live sports (Gordon et al., 2015). In addition, problem gamblers who are sensitive to reward are more likely to gamble for self- enhancement and to provide them with social connections (Sztainert et al., 2013). Therefore, these reward sensitive players are attracted to positive reinforcement and the nature of the sports betting provides them with opportunity to gamble in a social environment (Sztainert et al., 2013).

9.5.4 *Practical implications*

Understanding factors that are associated with problematic sports betting behaviour can be used by clinicians working with problem gambling clients, and can inform campaigns aimed at the prevention of problem gambling (Killick & Griffiths, 2019). For example, as younger sports bettors seem to be at-risk of experiencing gambling problems, this finding supports the suggestion of Hing et al. (2016a), that preventative measures should be implemented into school education programmes and media, to circumvent an appreciation in gambling problems amongst young individuals when they reach the legal age for sports betting.

The results also indicate that individual differences, more specifically, gambling motives, may be a vulnerability factor of problematic sports betting. Understanding motives for sports betting and their potential relationship with problem gambling can be used to develop and inform campaigns targeted at the prevention of problematic gambling. In addition, they can be used to inform treatment initiatives. The finding that problem gamblers are particularly motivated by

certain factors, more specifically, coping and positive affect upregulation motives, suggests that targeting these areas could be an important focus for interventions.

Identifying classes or types of sports bettors may provide additional information concerning variations in gambling patterns and associations with problematic gambling behaviour. Given the difference between gambling at a land-based betting outlet, and gambling online, it would be unsuitable to suggest that evidence for the effectiveness of treatment for online gamblers, automatically translates to problem gamblers who gamble at land-based venues. Intervention and treatment strategies need to be suitably adapted so that they can address the specific needs of multi-method and mixed mode sports bettors.

9.5.5 *Limitations*

There are several limitations of the study that should be mentioned. Firstly, the study relied on self-report data that is subject to the typical recall biases. With the aim of keeping the survey at a reasonable length, some potentially important questions were left out. For example, additional gambling activities and questions on monetary spending (average amount wagered in a session; amount won; amount cashed out) were not included. Moreover, multiple forms of gambling have the potential to contribute to an individual's PGSI score.

Other limitations include the sample, which was over-representative of problem gamblers, particularly those recruited using MTurk, but which as a result enabled key analyses to be conducted with a relatively large number of problem gamblers. The survey was conducted online, and therefore it cannot be claimed to be representative of sports bettors on the whole, as it was limited to those who could access the internet to take part. A large proportion of the sample was recruited via Facebook, which typically tends to have younger users. Consequently, participants' profile in the study was skewed towards younger sports bettors.

Strengths of this study include that it did not simply use a dichotomy of online vs. offline gambling to examine the impact of online sports betting, but rather created profiles to better understand how different gambling platforms are used. It also adds to the sparse literature on sports betting motivations, and demonstrates how the RGQ can be applied to specific types of gambling activity.

9.6 Conclusion

The present study highlights the importance of considering socio-demographic characteristics, personality factors, and the mode of sports betting when designing treatment strategies and preventative programmes. The difference in motivations between non-problem gamblers, at-risk gamblers, and problem gamblers points towards a need for further research to better understand the factors involved in problematic sports betting behaviour. This is the first study that applies LCA to characterise variations in sports betting access modes. The findings can be used to inform prevention and intervention efforts targeted at sports bettors. The results suggest that participating exclusively in online sports betting is not inherently associated with problem gambling, and attention should be directed at those who gamble using multiple modalities in order to reduce and prevent gambling-related harms.

Chapter 10: A quantitative analysis of problem gambling risk among online sports bettors

10.1 Background

There are many sources of risk for sports bettors who experience gambling-related harm. Some of the most prominently cited in recent years include the accessibility and the availability of more continuous forms of sports betting (e.g., in-play betting; Gainsbury et al., 2021; Killick & Griffiths, 2019; Lopez-Gonzalez et al., 2019a; Newall et al., 2021a). At the individual level, a large number of factors, including demographic, personality, cognitive, and environmental, have been identified as correlates or risks for sports bettors experiencing gambling-related problems or harm. However, little is known about the relative importance of these risk factors in predicting gambling-related harm among sports bettors.

10.1.1 Sports betting advertising

Exposure to gambling advertisements has been repeatedly found to increase gambling frequency in both adolescents and adults (Clemens et al., 2017, Felsher et al., 2004; Gavriel-Fried et al., 2010; Russell et al., 2018). The negative impact from being exposed to gambling advertising has been reported to be stronger in problem gamblers, than other types of gamblers (i.e., moderate, low-risk and non-problem gamblers) (Binde & Romilde, 2019). In a study of 6,034 Norwegians, greater self-reported exposure to gambling advertising was positively associated with greater impacts of gambling advertising, including gambling advertising involvement, knowledge and awareness (Hanss et al., 2015). This study found that problem gamblers reported stronger impacts of gambling advertising on their gambling involvement. However, there was no difference in the reported exposure between problem, moderate and low-risk gamblers. Therefore, the differences in the impacts of gambling advertising could not be attributed to differences in advertising exposure.

Research into the impact of sports betting advertising on sports betting behaviour has found that at-risk and problem gamblers are more likely than non-problem gamblers to report higher levels of exposure to sports betting advertisements and promotions than non-problem gamblers (Hing et al., 2015d; Sproston et al., 2015). In addition, greater self-reported exposure to sports betting advertising has been found to positively relate to sports betting behaviour, as well as problem gambling behaviour (Hing et al., 2015d; Russell et al., 2018). Two Australian studies

using ecological monetary assessment found a positive association between advertising exposure, and sports betting frequency and sports betting expenditure (Browne et al., 2019; Russell et al., 2018).

Sports bettors who watch sports programmes containing gambling advertisements have expressed greater intentions to gamble (Hing et al., 2015d; Hing et al., 2014c). In addition, problem gambling severity in online sports bettors has been related to a more positive attitude and response to sports betting advertising, resulting in a greater likelihood of using the sponsored products (Hing et al., 2017e).

Sports betting advertising is deeply integrated in broadcasts of sporting events (Milner et al., 2013; Purves et al., 2020; Thomas et al., 2012), and exposure to gambling-related marketing is increasing (Hing et al., 2016a; McMullan, 2011; Sproston et al., 2015). In the UK and Australia, this has resulted in various bans on gambling advertising during live sports. In Australia in 2018, a ban on gambling advertisements during broadcasts of live sports were introduced between 5am and 8.30pm (Victorian Responsible Gambling Foundation, 2018). In 2019, a similar ban was introduced in the UK by the Betting and Gaming Council, where betting adverts must not be shown on TV from five minutes before a live sporting event begins until five minutes after it ends, prior to the 9pm watershed (Betting and Gaming Council, 2020).

Sports betting advertising appears to influence gambling attitudes by glamorising and/or normalising gambling (Deans et al., 2017b). Australian studies have identified that sports betting operators often position sports betting as an activity undertaken by young, single, professional, tech-savvy males, which aligns with the demographic profile of higher risk sports bettors (Hing et al., 2014b; Sproston et al., 2015).

In addition to exposure to sports betting advertisements, the use of sports betting promotions have been positively associated with gambling problems and sports betting expenditure (Hing et al., 2015a, b). Examples of such sports betting wagering promotions include bonus bets, deposits into betting accounts, discounts, and money-back guarantees (Hing et al., 2015c, 2018). The use of marketing inducements has been found to be positively associated with frequency of gambling consumption (Newall et al., 2021b) and there have been concerns raised that some sports betting promotions stimulate impulse in-play betting among frequent sports viewers and problem gamblers (Hing et al., 2018).

10.1.2 Impulsivity and sports betting

Gambling disorder has often been positively associated with impulsivity and is considered a risk factor in its aetiology (Hodgins & Holub, 2015). There are varying definitions of impulsivity, although it is often defined as "a predisposition toward rapid, unplanned reactions to internal or external stimuli without regard to the negative consequences of these reactions to the impulsive individual or to others" (Moeller et al., 2001, p.1784). Literature on impulsivity suggests that it is not a unitary construct, but involves multiple facets of personality that each contribute to thoughtless and potentially dangerous behaviour, such as problem gambling (Cyders & Smith, 2008). The constructs of impulsivity have three common elements: (i) absence of regard for long-term consequences; (ii) rapid, unplanned reactions to stimuli without forethought and; (iii) decreased sensitivity to negative consequences (Moeller et al., 2001).

Impulsivity has been consistently associated with gambling disorder (previously known as pathological gambling), where individuals with gambling disorder are characterised by higher rates of impulsivity than non-pathological gamblers (Ioannidis et al., 2019). In a recent meta-analysis conducted by Ioannidis et al. (2019), positive associations were reported between gambling disorder and elevated impulsivity across a number of cognitive domains. In a study by Browne et al. (2019), 1,650 gamblers were surveyed to determine which of 25 known risk factors provided the largest explanatory power for gambling harm, trait impulsivity (as assessed using the Barratt Impulsiveness Scale-Brief, BIS-Brief; Steinberg et al., 2013) was found to be the most important risk factor by a large margin.

There has been a limited amount of research examining the relationship between trait impulsivity and online sports betting behaviour, although it has begun to receive more attention in recent years. Problem sports bettors are more likely to engage in impulsive sports betting behaviours that are likely to be based on rapid and un-planned decision making (Hing et al., 2018). Russell et al. (2018) used the 8-item BIS-Brief (Steinberg et al., 2013) to assess impulsiveness in a sample of 1,813 Australian gamblers. The results showed that individuals who bet on micro-events (a form of in-play betting where the outcome is determined almost immediately) tended to have high impulsivity scores. In addition, individuals who placed micro bets were more likely to have a gambling problem than those who did not place this type of bet. In-play betting involves rapid, responsive, and unplanned decision making, and is therefore more attractive to those with higher trait impulsivity, and these individuals may be attracted to the fast reward mechanisms that in-play betting provides (Russell et al., 2018).

López-Torres et al. (2021) surveyed 79 treatment-seeking gamblers and found that gambling online significantly increased the lack of premeditation (a component of impulsivity) level in comparison to offline gambling. The authors suggest that the structural characteristics and environmental conditions in which online gambling occurs could encourage individuals gambling online to take fewer premediated actions, regardless of the gambling activity. Similar results were reported by Mallorquí-Bagué et al. (2019) who showed that lack of premeditation was found among strategic gamblers, such as sports bettors, compared to non-strategic gamblers, such as lottery players. As a result, the authors suggested that there is a need for specific treatment strategies to reduce impulsivity in strategic online gamblers (Mallorquí-Bagué et al., 2019).

10.1.3 Sports betting involvement

A number of behavioural aspects of sports betting have been found to relate to problem gambling. One example is "involvement", which refers to the intensity of engagement in gambling activities (Binde, 2009). In the case of sports betting involvement, this consists of sports betting expenditure, frequency, and number of sports betting accounts. Higher sports betting expenditure and frequency have been consistently positively associated with gambling problems (Braverman & Shaffer, 2012; Gainsbury et al., 2020; Hing et al., 2017a; Hing et al., 2019; Mazar et al., 2020). Gainsbury et al. (2015e) reported that sports bettors with multiple online betting accounts had a higher likelihood of being a problem gambler. However, Hing et al. (2016a) did not find the same relationship among sports bettors. Overall, the research to date indicates that having a greater involvement in sports betting is possibly a risk factor for problem gambling.

10.1.4 Situational and structural characteristics of sports betting

A further area of interest in the gambling literature is the structural and situational characteristics of the gambling activity. Situational characteristics are predominantly features of the environment and they may be important in the initial decision to gamble (Griffiths, 1999b) and in some cases may facilitate further gambling (Griffiths & Parke, 2003). On the other hand, structural characteristics are related to features of a gambling activity itself that facilitate gambling behaviour (Griffiths, 1993).

One relevant situational characteristic of sports betting is the mode of access. There has been some evidence to suggest that sports betting online is positively associated with a greater risk

of experiencing gambling-related problems. For example, Lopez-Gonzalez et al. (2019a) showed that online sports bettors scored significantly higher on the Problem Gambling Severity Index (PGSI; Ferris & Wynne, 2001) compared to those who preferred to wager at a land-based venue (Lopez-Gonzalez et al., 2019a). Among treatment-seeking gamblers, Estévez et al. (2017) reported that sports bettors who place their bets exclusively online had higher levels of debt compared to land-based gamblers (Estévez et al., 2017).

Studies have also examined the relationship between the type of device used to gamble and problem gambling severity. For example, Gainsbury et al. (2015f) investigated the relationship between various gambling activities and interactive modes of access. The authors found that 9.4% of internet gamblers favoured gambling via a smartphone, while the majority preferred using a computer or laptop. Some studies have reported an increased potential for experiencing gambling problems when gambling using a smartphone (e.g., Gainsbury et al., 2016c; James et al., 2017). For sports bettors, Lopez-Gonzalez et al. (2019a) reported that smartphone betting was particularly prevalent among individuals categorised as problem gamblers.

The way in which sports bettors interact with mobile devices/apps involve constant interactions, as well as intermittent schedules of reinforcement that come with gambling on a smart phone, which may speed up the acquisition of gambling- related problems (James et al., 2017). James et al. (2017) argued that the development of harmful gambling behaviours would be quicker for those who gamble on a smartphone in comparison to other methods of gambling. One explanation is that online sports betting using a smartphone offers gamblers immediate accessibility to the sports betting product. Convenience and accessibility have been identified as one of many factors that facilitate harmful betting (Hing et al, 2015b; Parke & Parke, 2019). Therefore, the mode in which bets are placed is important to bear in mind when examining risk factors for sports bettors.

Another factor involved in understanding gambling behaviour is the structure of the gambling activities. Gambling activities vary in terms of their structural characteristics such as near wins, the amount of skill involved, and the probability of winning (Parke & Griffiths, 2007). Another important characteristic is the length of time between the stake and outcome (Griffiths & Auer, 2013). Structural characteristics such as reward distribution, event frequency and payout interval have often been linked to the development of gambling behaviours that are difficult to stop (Dowling et al., 2005). This is supported by a review by Harris and Griffiths (2018) who found that fast games are particularly appealing to those with gambling problems. Auer and

Griffiths (2016) argued that sports betting has changed from what was traditionally a discontinuous form of gambling to a continuous one, increasing the event frequency. It has been suggested that the most important factors relating to the likelihood of a person experiencing gambling problems, as well as individual risk factors and susceptibility of the individual gamblers, are the structural characteristics relating to the speed and frequency of the game (Griffiths and Auer., 2013)

Advances in technology have changed the way in which gamblers interact with gambling platforms. The internet has provided a foundation in which new technologies and betting practices have been built on, for example online bookmakers and betting exchanges (Kyrylenko, 2017). One such newer form of gambling is in-play betting. In-play betting appears to be positively associated with experiencing gambling- related problems; Gainsbury et al. (2020) reported that those who bet in-play had higher problem gambling severity scores than those who did not bet in-play. Additional studies have found that sports bettors with higher problem gambling severity scores place a greater number of their bets in-play, opposed to on the final outcome of the match (Hing et al., 2016a). A further relatively new sports betting feature is 'cash out', which allows bettors to settle their bet (at a profit or loss) before the event has finished. This results in funds being almost instantly credited to the players account, which allows them to continue betting. Therefore, there are also concerns that this form of gambling activity could be associated with problem gambling. However, the research to date on the implications of 'cash out' is scarce. Lopez-Gonzalez et al. (2019a) reported that in-play betting and 'cash out' feature use was more prevalent among problem gamblers than any other gambling severity group.

10.2 Aims of the present study

The main objective of the study which is set out in this chapter is to examine whether certain variables such as impulsivity, motivations, sports betting advertising impacts, and modes of access are predictive of problem gambling severity among a sample of international sports bettors. The current knowledge of predictive factors are quite disparate, and therefore a more unified, predictive model will be created. This will determine the relative importance of the aforementioned predictors. Due to increasing concerns about the role of newer features of online sports betting (i.e., in-play betting and 'cash out'), these factors will also be included in the model. By understanding the characteristics of sports bettors, or what factors might predict

problem gambling, successful interventions and treatment strategies can be developed to potentially reduce the number of problem sports bettors.

The following hypotheses will be addressed:

- Hypothesis 1: In-play betting and cash out frequency is significantly associated with problem gambling severity among sports bettors.

- Hypothesis 2: Advertising impact, advertising exposure, and promotion uptake will predict problem gambling severity among sports bettors.

- Hypothesis 3: Scores on impulsivity domains will predict problem gambling severity among sports bettors.

- Hypothesis 4: Impact of gambling advertising, exposure to gambling advertising, promotion uptake, frequency of in-play betting and 'cash out' use, platform used to bet, impulsivity, and sports betting motivations will predict problem gambling severity

10.3 Methodology

10.3.1 Participants

A description of participants that took part in the survey can be found in Chapter 9.3.1

10.3.2 Development of the survey

The survey contained a total of 76 questions (see Appendix H). Questions to be tested empirically were derived from findings from the scoping study (Chapter 4) and the qualitative interview study (Chapter 5). Chapter 4 (the scoping study) identified characteristics that were typically associated with in-play sports bettors, including higher trait impulsivity and demographic characteristics, such as being male and younger in age. Moreover, relationships between the use of in-play betting and associated features including 'cash out', and problem gambling behaviour were examined. In addition, the wide availability of these newer sports betting products being offered by multiple gambling operators across different device types (desktop and mobile devices) was reported in the scoping study. Chapter 5 identified several salient motivations that sports bettors had for engaging in in-play sports betting, including skills and excitement reasons and examined how these motivations differed between gamblers with

varying degrees of gambling severity. In addition, Chapter 5 identified various marketing strategies that were deemed to be particularly attractive to sports bettors, as well as how responses to gambling advertising varied between recreational sports bettors and those with higher problem gambling severity scores. Therefore, in order to examine these findings further, the online surveys included measures relating to these identified features of sports betting.

10.3.3 Measures

10.3.3.1 Demographic questions

Participants were asked to indicate their age, gender, ethnicity, country of residence, marital status, highest level of education and their working status. A full list of questions can be found in Appendix H.

10.3.3.2 Use of new structural characteristics

Participants were asked to assess the frequency of their engagement in a number of behaviours in relation to their betting activity. These structural characteristics questions were adapted from those developed by Lopez-Gonzalez et al. (2019a). The original survey questions by Lopez-Gonzalez et al. (2019a) assessed items on a five-point Likert scale (ranging from 1=never, to 5=always). The present study asked participants to indicate (yes/no) whether they engaged in specific sports betting behaviours e.g., *"I use the 'cash out' feature"*. If the participant answered 'yes' to whether or not they took part in the activity, they would be directed to the next question quantifying the frequency that they engaged in this behaviour. These items were assessed on a four-point Likert scale (1=sometimes; 2=about half the time; 3=most of the time; 4=always). Other survey amendments included the removal of a question relating to Fantasy sports participation. An additional question was included which asked participants about their offline and online bet placement methods. Response options for this item were: in-person at a bookmaker, in person at a venue, on the phone to the bookmaker, online with a bookmaker, online with a betting exchange and somewhere else/another way. Participants were able to select more than one option.

Other behaviours were also assessed (e.g., whether they enjoyed a game more when betting on it, whether they discussed the bet with somebody else prior to placing it). A self-perceived measure of the time they spent online sports betting was measured using a four-point scale (1=less than one hour per week; 2=between one and three hours per week; 3=more than three hours but less than seven hours per week; 4=more than 1 hour per day).

10.3.3.3 Mode of sports betting

Participants were asked their preferred location to bet on sports (e.g., in person at a bookmaker, in-person at a venue, over the telephone with a bookmaker, online with a bookmaker, or somewhere else/another way). Participants indicated 'yes' or 'no' to whether they used any of these methods and they could select more than one answer. A latent class analysis (LCA) was conducted in Chapter 6 in order to categorize subgroups of gamblers based on the combination of platforms that they use to bet. Five classes of sports bettors were identified: online sports bettors (who used online bookmakers for betting), multi-mode offline sports bettors (who typically placed bets over the phone and at high-street bookmakers), multi-mode online bettors (who used betting exchanges and online bookmakers to place their bets), mixed mode gamblers (who placed their bets both online and offline) and other (those sports bettors who tended to place their bets using a different method).

Participants were also asked where they usually place their online bets (e.g., at home, at work, at the pub etc.). They were also asked their preferred device to use when betting online. The type of device included three choices: laptop/computer, smartphone or tablet.

10.3.3.4 Reasons for gambling

Motivations for gambling was assessed using the Reasons for Gambling Questionnaire (RGQ; Wardle et al., 2011b) and adapted to be used to assess sports betting motives. The following factors were identified and were used in the present study: winning, social, pleasure, mastery, and affect regulation. Cronbach's alpha for the present study was .64 (winning), .79 (social), .66 (pleasure), .68 (mastery), and .81 (affect regulation). Please see the methods section in Chapter 6 for further information on how the factors for sports betting motivation were assessed.

10.3.3.5 Impulsivity

The Barratt Impulsiveness Scale (BIS) is one of the most commonly used scales to assess impulsivity (Spinella, 2007). The present version of the scale (BIS-11; Patton et al., 1995) comprises 30 items describing common impulsive or non-impulsive (for reversed score items) behaviours and preferences. The items comprise three non-overlapping subscales include: non-planning (BISnp), motor impulsivity (BISm), and attentional impulsivity (BISa) (Patton et al., 1995). The BIS-15 (Spinella, 2007) is a short form of the Barratt Impulsiveness Scale (BIS-11, Patton et al., 1995) and retains the three-factor structure. Items are rated on a 4-point Likert-

type scale (1=rarely/never; 2=occasionally; 3=often; 4=almost always). Representative items for the sub-scale include: "I am a careful thinker" (BISnp, inverted item), "I act on spur of the moment" (BISm), and "I don't pay attention (BISa). Spinella (2007) argues that the BIS-11 is a short, more condensed and homogenous scale, and it can act as an alternative to the longer scale while retaining good psychometric properties. It has demonstrated good internal consistency (α=.79) as well as good intrascale reliability (Spinella et al., 2007). Several gambling studies have used the BIS-15 (e.g., Brown et al., 2016; Wood et al., 2017). Cronbach's alpha for the present study was .73 (non-planning), .72 (attentional), .84 (motor).

10.3.3.6 Impact of gambling advertising

Respondents completed nine questions on how gambling advertising had an impact on the gamblers (Hanss et al., 2015). Five of the items have been adopted from the Effects of Gambling Advertising Questionnaire (EGAQ; Derevensky et al., 2007; Derevensky et al., 2010). The remaining three items were formulated by Hanns et al. (2015) to investigate aspects of advertising impacts that were not covered by the EGAQ items. Two of these were related to knowledge about gambling opportunities ("Gambling advertisement has increased my knowledge of gambling options" *and* "Gambling advertisement has increased my knowledge of gambling providers"). One item assessed gambling-related attitudes ("I think more positively about gambling because of gambling advertisements") and one item assessed change in behaviour due to gambling advertisement ("I play with higher risk (use more money) because of gambling advertisements"). Participants were asked to indicate how strongly they agreed with each statement on a four-point Likert-type scale (1=strongly disagree; 2=disagree; 3=agree; 4=strongly agree). Three factors were identified: involvement (five items), awareness (two items) and knowledge (two items) (Hanss et al., 2015). These dimensions of advertising represented the perceived impacts of (i) gambling-related attitudes, interest and behaviour (involvement, α=.86), (ii) knowledge about gambling products (knowledge, α=.93); and (iii) the extent to which individuals are aware of gambling advertising (awareness, α=.62) (Hanss et al., 2015). Index variables were computed for each factor. A composite sum score was calculated for each factor, with higher score indicating more influence from gambling advertising.

10.3.3.7 Exposure to sports betting advertising

Exposure to sports betting advertising was assessed using four items. The items asked participants to indicate how often they had seen gambling advertisements on television, radio,

billboard/advertising hoarding, newspapers, magazines, internet pop-ups, emails, text messages, high-street bookmakers, social media, and other. Answers were given on Likert-type scale: 4=daily; 3=weekly; 2=monthly; or 1=never. A total exposure score was created by summing the frequency of each item. For each participant, the sum score across the nine items was computed.

10.3.3.8 Sports betting promotion uptake

Participants were asked to indicate how often they had used the following sports betting promotions in the previous 12 months: sign-up offer, enhanced/boosted odds, in-play offer, refer-a-friend offer, mobile-betting offer, refund/stake-back offer, matched stake or deposit offer, and other. The nine response items were measure using a Likert-type scale where 1=everyday/almost everyday; 2=4-5 days a week; 3=2-3 days a week; 4=about once a week; 5=2-3 days a month; 6=about once a month; 7=6-11 times a year; 8=1-5 times per year; and 9=not in the last 12 months. To calculate overall promotion uptake, the sum score across the nine items was computed.

10.3.3.9 Problem gambling screen

Please refer to Chapter 9 for information about the Problem Gambling Severity Index (Ferris & Wynne, 2001).

10.3.3.10 Sports betting frequency

Participants were asked to indicate how often they had bet on number of different sporting activities (e.g., football, horse racing, rugby league, rugby union, etc.) in the previous 12 months. The nine response scales were: 1=every day/almost every day, 2=4-5 days a week, 3=2-3 days a week, 4=about once a week, 5=2-3 days a month, 6=about once a month, 7=6-11 times a year, 8=1-5 times per year, and 9=not in the last 12 months. A total sports betting frequency score was computed by summing the nine items.

10.3.3.11 Additional questions

Other questions included how often participants placed in-play bets with response options ranging from every day/almost every day to less frequently than once per year. Participants also indicated how many online gambling accounts they had with different operators. Participants were also asked *"How has your gambling behaviour changed since COVID-19"* and asked to type in a response to this question.

10.3.4 Procedure

See Chapter 9 for details of the survey procedure

10.3.5 Data analysis

Data preparation and calculation of chi-square tests, correlations, analysis of variance (ANOVA), and multiple regression were conducted using SPSS, version 25. Common testing procedures were applied to examine the differences between the gambling severity groups. These include the χ^2-test (for dichotomous and categorical variables), followed by post hoc comparisons using adjusted *Z* residuals. For these, adjusted *p* values were used to account for type 1 errors. Continuous variables were compared using a one-way analysis of variance (ANOVA). In cases of variances that were not homogenous, significance tests were conducted using the Welch-Test (Zimmerman, 2004). Where the Welch test was used, Games-Howell was used for post hoc analysis, as it is one of the recommended tests for unequal group sizes (Field, 2013, p.459).

Several assumptions were checked before conducting a multiple regression, including linearity, independent errors, homoscedasticity, and normally distributed errors (Field, 2013). To test the assumption of linearity, the relationship between the outcome variable and independent variable was confirmed by producing scatterplots (Field, 2013). A straight line between the independent and dependant variable indicates that the relationship between these variables is linear. The Variance Inflation Factor (VIF) and tolerance statistic were used for collinearity diagnostics (Field, 2013). VIF values over 10 indicate a cause for concern (Myers, 1990), the minimum acceptable tolerance value was .10 (Tabachnick & Fidell, 2001). Durbin-Watson was used to detect autocorrelation in the regression residuals. Values less than one or greater than three indicate cause for concern (Field, 2013). The Durbin-Watson statistic was used to assess whether autocorrelation between variables was present. A test statistic value in the range of 1.5 to 2.5 indicates that the data are relatively normal, while values outside of this range could be cause for concern (Field, 2013).

10.4 Results

10.4.1 Demographic characteristics of sports bettors

A summary of the demographic characteristics of participants is reported in Chapter 9.

10.4.2 Sports betting behaviour

10.4.2.1 Number of online gambling accounts

A total of 221 (34.9%) of participants indicated that they had one online gambling account, while 178 (28.1%) indicated that they had two online gambling accounts (Table 10.1). A further 116 (18.3%) indicated that they had five or more online gambling accounts. After controlling for familywise error by adjusting *p*-values using Bonferroni correction, a significant positive association was found between the number of online gambling accounts and problem gambling categories (χ^2 (12) = 76.67, p<.001). Non-problem gamblers were more likely to have only one online gambling account (Z=5.0), whereas problem gamblers were more likely to have three online gambling accounts (Z=6.4). Compared to females, males were significantly more likely to have five or more online gambling accounts ($\chi^2(8)=25.01$, p=.002).

10.4.3.1 Device used to place bets

The most popular device used for placing bets was via a mobile phone (n=382, 60.3%), followed by on a laptop or computer (n=229, 36.1%). Significant differences were found between the type of device used for online betting and problem gambling categories ($\chi^2(9)=39.84$, p<.001). Adjusted residuals in the contingency table with a z score higher than 2 showed that problem gamblers were most likely to use a laptop for sports betting (Z=5.9) and they were also the least likely to bet via a mobile phone (Z=-6.1).

10.4.3.2 Location of placing sports bets

The majority of participants placed bets at home (n=527, 83.1%), with some indicating that they place bets at work (n=68, 10.7%). A significant positive association was found between location of online betting and problem gambling categories ($\chi^2(6)=102.25$, p<.001). Adjusted

residuals in the contingency table with a z score higher than 2 showed that problem gamblers were most likely to gamble at work (Z=10) and they were also the least likely to gamble at home (Z=-8.9).

Table 10.1

Sports betting behaviour by gambling category (n=634)

	All	Non-problem	Low-risk	Moderate-risk	Problem	χ^2 (*df*)
Number of online gambling accounts						76.67(12)*
1	221 (34.9%)	95 (43.0%)	46 (20.8%)	28 (12.7%)	52 (23.5%)	
2	178 (28.1%)	50 (28.1%)	41 (23.0%)	32 (18.0%)	55 (30.9%)	
3	90 (14.2%)	13 (14.4%)	14 (15.6%)	11 (12.2%)	52 (57.8%)	
4	29 (4.6%)	7 (24.1%)	6 (20.7%)	5 (17.2%)	11 (37.9%)	
5+	116 (18.3%)	27 (33.3%)	40 (34.5%)	31 (26.7%)	18 (15.5%)	
Location						105.62(6)*
Home	527 (83.1%)	175 (33.2%)	136 (25.8%)	95 (18.0%)	121 (23.0%)	
Pub	29 (4.6%)	7 (24.1%)	7 (24.1%)	5 (17.2%)	10 (34.5%)	
Work	68 (10.7%)	6 (8.8%)	2 (2.9%)	4 (5.9%)	56 (82.4%)	
Other	10 (1.6%)	4 (40.0%)	2 (20%)	3 (30%)	1 (10%)	
Device						39.84(9)*
Laptop/computer	229 (36.1%)	59 (25.8%)	46 (20.1%)	24 (10.5%)	100 (43.7%)	

Mobile phone	382 (60.3%)	127 (33.2%)	96 (25.1%)	80 (20.9%)	79 (20.7%)
Tablet	21 (3.3%)	6 (28.6%)	4 (19.0%)	3 (14.3%)	8 (38.1%)

*Significant at the Bonferroni corrected level of p=.006

10.4.3 Structural characteristics

The use of new structural characteristics differed among individuals from different gambling severity groups. Table 10.2 shows the main findings for these variables. Problem gambling severity was positively associated with: (i) how often sports bettors used new online betting functionalities ('cash out' and in-play betting), and (ii) time devoted to online sports betting.

Over one-third of the participants indicated that they discussed a bet before placing it. However, after controlling for familywise error by adjusting p-values using Bonferroni correction (.008), there was no significant difference between discussing a bet before placing it and PGSI group, $F(3, 62.43)=1.63$, p=.19). Three-quarters of participants said that they enjoyed a game more if they had bet on it (n=474), however there was no significant difference between PGSI group and enjoyment if the participant had bet on events during the game, $F(3, 244.92)=3.42$, p=.02).

Three-quarters of participants indicated that they use the cash out feature (n=474, 75.1%). There was a significant difference between PGSI group and cash out frequency ($F(3, 227.63)=4.02$, p=.008), ω^2=.01. Post hoc comparisons using the Games-Howell post hoc procedure (Table 10.3) indicated that problem gamblers (M=1.79, SD=.83) used the 'cash out' feature significantly more often than non- problem gamblers (M=1.51, SD=.86) and low-risk gamblers (M=1.49, SD=.81). The significant effect sizes were .33 and .37, respectively.

Over half of the participants indicated that they bet on events during a game (n=410, 65%). There was a significant difference between PGSI groups and frequency of betting in-play, F(3, 197.82)=15.31, p<.001), ω^2=.10. Problem gamblers (M=2.12, SD=.94) were significantly more likely to bet during the game than non-problem gamblers (M=1.43, SD=.80), low-risk gamblers (M=1.52, SD=.85) and moderate-risk gamblers (M=1.67, SD=.84). The significant effect sizes were .89, .49 and .43, respectively.

There was a significant difference between PGSI group and time spent online sports betting, $F(3,305.20)=20.64$, p<.001), ω^2=.09. Time spent online sports betting was significantly higher for problem gamblers (M=2.19, SD=.87) compared to non-problem gamblers (M=1.42,

SD=.89) and low-risk gamblers (M=1.81, SD=1.10). The significant effect sizes were .87 and .38, respectively. Moderate-risk gamblers (M=1.97, SD=1.10) and low-risk gamblers also scored significantly higher than non-problem gamblers, with effect sizes of .55 and .39, respectively. Similarly, there was a significant difference between PGSI group and frequency of in-play sports betting, $F(3, 309.64)=30.02$, $p<.001$). Problem gamblers (M=6.67, SD=1.84) placed in-play sports bets more frequently than non-problem (M=4.80, SD=2.32), low-risk (M=5.16, SD=2.49) and moderate-risk gamblers (M=5.55, SD=2.27). The significant effect sizes were .89, .69 and .54, respectively. Moderate-risk gamblers also did in-play betting significantly more often than non-problem gamblers, with an effect size of .33.

Table 10.2

Differences in online gambling behaviour between non-problem, low-risk, moderate-risk and problem gamblers

	All	Non-problem	Low-risk	Moderate-risk	Problem	Welch *F*	ω^2
How often do you use the 'cash out' feature?[a] (n=474)	1.61 (.85)	1.51 (.86)	1.49 (.81)	1.56 (.89)	1.79 (.83)	4.02*	.01
I bet on events during the game[a] (n=411)	1.77 (.92)	1.43 (.80)	1.52 (.85)	1.67 (.84)	2.12 (.94)	15.31*	.10
Before placing a bet, how often do you discuss it with somebody else?[a] (n=221)	2.09 (.94)	2.39 (1.12)	2.22 (.90)	2.06 (.97)	1.98 (.87)	1.63	.01
I enjoy watching a game more if I have bet on it[a] (n=475)	2.65 (1.08)	2.61 (1.13)	2.78 (1.08)	2.89 (.97)	2.48 (1.06)	3.42	.01
Time spent online sports betting[a] (n=634)	1.83 (1.02)	1.42 (.89)	1.81 (1.12)	1.97 (1.10)	2.19 (.87)	25.64*	.09

Time spent in-play sports betting[b] (n=634)	5.57 (2.34)	4.80 (2.32)	5.16 (2.49)	5.55 (2.27)	6.67 (1.84)	30.02*	.10

*Significant at the Bonferroni corrected level of *p*=.008

Mean (SD)

[a]Measured on a four-point Likert scale, [b] Measured on a nine-point Likert scale

Table 10.3

Post hoc results for differences in online gambling behaviour between non-problem, low-risk, moderate-risk and problem gamblers

	Mean	Mean differences (effect sizes are indicated in parentheses)			
How often do you use the 'cash out' feature?		1	2	3	4
1. NPG	1.51	-			
2. LR	1.49	.02 (.02)	-		
3. MR	1.56	-.05 (.06)	.16 (.08)	-	
4. PG	1.79	-.28* (.33)	.20* (.37)	-.07 (.26)	-
I bet on events during the game					
1. NPG	1.43	-			
2. LR	1.52	-.08 (.11)	-		
3. MR	1.67	-.23 (.29)	-.15 (.18)	-	
4. PG	2.12	-.69** (.89)	.61** (.49)	.45** (.43)	-
Time spent online sports betting					
1. NPG	1.42	-			
2. LR	1.81	-.39* (.39)	-		
3. MR	1.97	-.56** (.55)	-.16 (.14)	-	
4. PG	2.19	-.78** (.87)	-.39* (.38)	-.22 (.22)	-
Time spent in-play sports betting					

1. NPG	4.80	--			
2. LR	5.16	-.37 (.15)	-		
3. MR	5.55	-.75* (.33)	-.39 (.16)	-	
4. PG	6.67	-1.89** (.89)	-1.52** (.69)	-1.13** (.54)	-

Note. NPG=non-problem gambler; LR=low-risk gambler; MR=moderate-risk gambler; PG=problem gambler

*p<.05, **p<.001

10.4.4 Frequency of betting on different type of sports

Table 10.4 shows that the most popular sports to bet on were football (soccer) (M=4.22, SD=2.39) and horse racing (M=2.91, SD=2.59). Non-problem gamblers (M=3.69, SD=2.30) were significantly less likely to bet on football than low-risk gamblers (M=4.50, SD=2.35), moderate-risk gamblers (M=4.53, SD=2.28), and problem gamblers (M=4.36, SD=2.51). Problem gamblers were significantly more likely to bet on all the remaining forms of sports (horse racing, rugby league, rugby union, golf, tennis, cricket, American football, boxing, and F1 racing) than low-risk gamblers, moderate-risk gamblers, and non-problem gamblers. Several one-way ANOVAs (Table 10.4) revealed differences in the frequency of betting on different events between the gambling categories. All of the sporting events showed significant differences in betting frequency between the gambling groups.

Table 10.4

Differences in sports bet on between non-problem, low-risk, moderate-risk and problem gamblers

Sport	Total (n)	All	Non-problem	Low-risk	Moderate-risk	Problem	Welch F	ω^2
Football (soccer)	633	4.22 (2.39)	3.69 (2.30)	4.50 (2.35)	4.53 (2.28)	4.36 (2.51)	4.88	.02
Horse racing	633	2.91 (2.59)	2.11 (2.33)	2.90 (2.74)	2.92 (2.67)	3.71 (2.43)	14.32*	.05
Rugby league	632	1.18 (2.07)	.45 (1.30)	.36 (1.25)	.65 (1.65)	2.89 (2.42)	56.32*	.03

Rugby union	631	1.14 (1.89)	.42 (1.07)	.47 (1.18)	.62 (1.41)	2.70 (2.30)	54.18*	.29
Golf	631	1.35 (1.94)	.60 (1.29)	.87 (1.54)	.89 (1.34)	2.76 (2.29)	42.59*	.22
Tennis	630	1.36 (2.16)	.69 (1.70)	.83 (1.76)	.79 (1.64)	2.81 (2.79)	35.93*	.18
Cricket	632	1.22 (2.05)	.35 (.99)	.63 (1.47)	.83 (1.84)	3.13 (2.64)	54.91*	.25
American football	631	1.41 (2.29)	.51 (1.44)	.53 (1.47)	1.22 (2.15)	3.24 (2.29)	52.95*	.25
Boxing	630	1.51 (2.04)	.61 (1.24)	.87 (1.31)	.99 (1.45)	2.82 (2.52)	60.10*	.30
F1 racing	632	1.09 (2.53)	.35 (1.13)	.30 (.86)	1.74 (2.49)	2.84 (2.82)	57.24*	.33

*Significant at the Bonferroni corrected level of p=.005

Post hoc comparisons using the Games-Howell procedure (Table 10.5) indicated that problem gamblers reported betting more frequently on rugby league, rugby union, golf, tennis, cricket, boxing and F1 than moderate-risk, low-risk and non-problem gamblers. Low-risk, moderate-risk and problem gamblers bet significantly more frequently on football and horse racing than non-problem gamblers. Problem gamblers and moderate-risk gamblers bet significantly more frequently on American football than low-risk and non-problem gamblers.

Table 10.5

Post hoc comparison for frequency of betting on different events by problem gambling group

	Mean	Mean differences (effect sizes are indicated in parentheses)			
Football		1	2	3	4
1. NPG	3.69	-			
2. LR	4.50	-.81 (.34)*	-		
3. MR	4.53	-.84 (.29)*	-.03 (.01)	-	
4. PG	4.34	-.65 (.27)*	.15 (.06)	.19 (.07)	-
Horse racing					
1. NPG	2.10	-			

2. LR	2.90	-.80 (.31)*	-		
3. MR	2.92	-.82 (.32)*	-.21 (.01)	-	
4. PG	3.71	-1.60 (.67)**	-.80 (.31)*	-.78 (.31)	-
Rugby league					
1. NPG	.45	-			
2. LR	.36	.09 (.07)	-		
3. MR	.65	-.19 (.13)	-.29 (.20)	-	
4. PG	2.87	-2.42 (1.25)**	-2.52 (1.31)**	-2.22 (1.08)**	-
Rugby union					
1. NPG	.42	-			
2. LR	.47	-.04 (.04)	-		
3. MR	.62	-.20 (.16)	-.15 (.11)	-	
4. PG	2.72	-2.30 (1.32)**	-2.25 (1.27)**	-2.22 (1.09)**	-
Golf					
1. NPG	.60	-			
2. LR	.87	-.27 (.19)	-		
3. MR	.89	-.28 (.22)	-.07 (.07)	-	
4. PG	2.74	-2.14 (1.16)**	-1.87 (.97)**	-1.86 (1.00)**	-
Tennis					
1. NPG	.69	-			
2. LR	.83	-.14 (.08)	-		
3. MR	.79	-.11 (.06)	.03 (.02)	-	
4. PG	2.80	-2.11 (.92)**	-1.97 (.84)**	-2.00 (.88)**	-
Cricket					
1. NPG	.35	-			
2. LR	.63	-.28 (.22)	-		
3. MR	.83	-.48 (.32)	-.20 (.12)	-	
4. PG	2.81	-2.46 (1.39)**	-2.18 (1.17)**	-1.98 (1.01)**	-
American football					
1. NPG	.51				
2. LR	.52	-.02 (.01)	-		
3. MR	1.21	-.71 (.39)*	-.69 (.37)*	-	
4. PG	3.12	-2.62 (1.42)**	-2.59 (1.41)**	-1.91 (.91)**	-

Boxing					
1. NPG	.61	-			
2. LR	.87	-.26 (.20)	-		
3. MR	.99	-.38 (.28)	-.12 (.09)	-	
4. PG	3.22	-2.61 (1.11)**	-2.35 (.97)**	-2.23 (.89)**	-
F1 racing					
1. NPG	.34	-			
2. LR	.30	.04 (.05)	-		
3. MR	.48	-.13 (.72)	-.18 (.77)	-	
4. PG	2.82	2.48 (1.16)**	2.52 (1.22)**	2.32 (.41)**	-

Note. NPG=non-problem gambler; LR=low-risk gambler; MR=moderate-risk gambler; PG=problem gambler

*p<.05, **p<.01

10.4.5 Uptake of sports betting promotions

The most frequently used sports betting promotion was enhanced/boosted odds (M=2.87, SD=2.22), followed by in-play offers (M=2.35, SD=2.43) and refund/stake offers (M=2.14, SD=2.38). A series of one-way ANOVAs indicated that promotion uptake was significantly different amongst PGSI groups, across all types of promotion (Table 10.6). Post hoc analysis showed that problem gamblers were significantly more likely to use all types of promotion, compared to other gambling categories.

Spearman's rank-order correlation coefficient was used to assess the relationship between sports betting promotion use and PGSI scores. There was a positive correlation for all of the promotion types and PGSI score. The strongest correlations were between refer-a-friend and PGSI score (r_s=.55, n=627, p<.001), mobile betting offer (r_s=.44, n=629, p<.001), and sign-up offers (r_s=.42, n=630, p<.001).

Table 10.6

Differences in promotion uptake between non-problem, risk and problem gamblers

*Significant at the Bonferroni corrected level of p=.003

Promotion type	Total (n)	All	Non-problem	Low-risk	Moderate-risk	Problem	Welch F	ω^2	r_s
Sign-up	633	1.92 (2.22)	1.09 (1.65)	1.17 (1.63)	1.69 (1.97)	3.49 (2.45)	46.24*	.21	.42*
Enhanced/boosted odds	629	2.84 (2.47)	1.97 (2.33)	2.57 (2.42)	2.70 (2.41)	4.01 (2.24)	26.22*	.10	.32*
In-play offer	631	2.35 (2.43)	1.31 (1.95)	1.86 (2.26)	2.32 (2.34)	3.82 (2.36)	44.51*	.17	.41*
Refer a friend	630	1.33 (2.12)	.35 (1.01)	.41 (1.12)	1.01 (1.97)	3.23 (2.37)	83.03*	.35	.55*
Mobile betting	632	1.98 (2.45)	.95 (1.92)	1.26 (1.91)	2.11 (2.51)	3.52 (2.50)	46.01*	.19	.44*
Refund/stake offer	629	2.14 (2.38)	1.31 (2.06)	1.57 (2.08)	2.00 (2.22)	3.51 (2.43)	32.94*	.14	.38*
Matched stake or deposit offer	632	1.65 (2.26)	.85 (1.07)	1.04 (1.92)	1.41 (2.22)	3.10 (2.45)	38.66*	.18	.41*
Other	542	1.05 (2.14)	.23 (1.07)	.50 (1.68)	.71 (1.90)	2.44 (2.64)	33.31*	.19	.48*

10.4.6 Exposure to gambling advertisements

Correlations between problem gambling severity score as assessed by the PGSI and exposure to gambling advertising were investigated (Table 10.7). Spearman's rho correlation analyses

found significant correlations between sports bettors' problem gambling severity scores and exposure to most of the forms of gambling advertising. Although, the correlations of problem gambling severity score and exposure to television gambling advertisements was not significant (r_s=-.13, p=.75), nor was there a significant correlation between PGSI score and exposure to internet pop up advertising (r_s=.07, p=.62).

A one-way ANOVA showed differences in reported overall exposure between gambling categories, $F(3, 305.51)=26.09$, p<.001), ω $^{2=}$.12. After controlling for familywise error by adjusting p-values using Bonferroni correction (.002), there was a significant difference between all gambling categories and various types of gambling advertising exposure, except for television advertising, $F(3, 318.12)=.40$, p=.75, $\omega^{2=}$-.002, and internet pop-up advertising, $F(3, 317.60)=2.86$, p=.04, $\omega^{2=}$.01 (Table 10.7).

Post hoc comparisons using the Games-Howell procedure (Table 10.8) indicated that problem gamblers reported significantly higher exposure to radio, newspaper, and magazine advertising than moderate-risk gamblers, low-risk gamblers and non-problem gamblers. Problem gamblers reported significantly higher exposure to email, text-message, high-street bookmaker, and social media advertising than non-problem gamblers and low-risk gamblers. However, there was no significant difference in reported advertising exposure between problem gamblers and moderate-risk gamblers.

Table 10.7

Correlations and one-way ANOVAs for advertising exposure and problem gambling severity

Type of ad.	Total (n)	All participants[a]	No-risk[a]	Low-risk[a]	Moderate-risk[a]	Problem gambler[a]	Welch F	ω^2	r_s
Television	633	2.15 (.96)	2.14 (1.00)	2.17 (.93)	2.22 (.95)	2.10 (.96)	.40	-.002	-.13
Radio	628	1.20 (1.16)	.99 (1.15)	.98 (1.17)	1.14 (1.16)	1.62 (1.07)	13.67*	.05	.23*

Billboard/hoardings	630	1.35 (1.06)	1.20 (1.06)	1.36 (1.07)	1.21 (1.05)	1.60 (1.00)	6.53*	.02	.13*
Newspapers	630	1.21 (1.18)	.90 (1.13)	1.02 (1.15)	1.09 (1.16)	1.77 (1.08)	23.56*	.09	.30**
Magazines	629	.82 (1.08)	.49 (.93)	.51 (.93)	.73 (1.04)	1.49 (1.09)	39.47*	.17	.39*
Internet pop-ups	631	2.02 (1.05)	1.88 (1.05)	2.00 (1.10)	2.19 (1.00)	2.08 (1.03)	2.86	.01	.07
Emails	632	1.58 (1.16)	1.26 (1.20)	1.50 (1.14)	1.74 (1.15)	1.91 (1.03)	13.33*	.05	.275*
Text messages	632	.87 (1.11)	.53 (.93)	.56 (.93)	.78 (1.07)	1.56 (1.16)	38.50*	.17	.37*
High street bookmakers	627	1.37 (1.13)	1.03 (1.12)	1.30 (1.11)	1.41 (1.16)	1.78 (1.01)	16.91*	.07	.26*
Social media	633	1.92 (1.10)	1.60 (1.16)	1.88 (1.14)	2.29 (.94)	2.06 (.99)	49.16*	.04	.17*
Total exposure score	608	14.49 (6.89)	12.01 (6.17)	13.29 (6.31)	14.80 (6.52)	17.96 (6.90)	27.38*	.12	.51*

[a]Means and SD.

*Significant at the Bonferroni corrected level of p=.002

Table 10.8

Post hoc comparisons for exposure to gambling advertisements by problem gambling group

	Mean	Mean differences (effect sizes are indicated in parentheses)			
Total exposure		1	2	3	4
1. NPG	12.01	-			
2. LR	13.29	-1.28 (.32)	-		
3. MR	14.80	-2.80 (.44)**	-1.51 (.24)	-	
4.PG	17.96	-5.95 (.91)**	-4.67 (.71)**	-3.16 (.47)**	-
Radio					
1. NPG	.99	-			
2. LR	.98	.01 (.001)	-		
3. MR	1.14	-.12 (.13)	-.13 (.14)	-	
4. PG	1.62	-.63 (.57)**	-.64 (.57)**	-.52 (.43)**	-
Billboard/hoardings					
1. NPG	1.20	-			
2. LR	1.36	-.17 (.15)	-		
3. MR	1.21	.003 (.009)	.17 (.14)	-	
4. PG	1.60	-.42 (.39)**	-.25 (.23)	-.42 (.38)**	-
Newspapers					
1. NPG	.90	-			
2. LR	1.02	-.14 (.11)	-		
3. MR	1.09	-.18 (.17)	.04 (.06)	-	
4. PG	1.77	-.89* (.79)	-.75** (.67)	.70** (.61)	-
Magazines					
1. NPG	.49	-			
2. LR	.51	-.29 (.02)	-		
3. MR	.73	-.21 (.24)	-.18 (.22)	-	
4. PG	1.49	-1.04** (.99)	-1.00** (.97)	-.82** (.71)	-
Emails					

1. NPG	1.26	-			
2. LR	1.50	-.27 (.21)	-		
3. MR	1.74	-.53** (.41)	-.26 (.21)	-	
4. PG	1.91	-.69** (.58)	-.42** (.38)	-.16 (.16)	-
Text messages					
1. NPG	.53	-			
2. LR	.56	- .06 (.03)	-		
3. MR	.78	-.29 (.25)	-.23 (.22)	-	
4. PG	1.56	-1.07** (.98)	-1.02** (.95)	-.79 (.70)	-
High street bookmakers					
1. NPG	1.03	-			
2. LR	1.30	-.30 (.24)	-		
3. MR	1.41	-.44** (.33)	-.14 (.10)	-	
4. PG	1.78	-.77** (.68)	-.47** (.44)	-.33 (.33)	-
Social media					
1. NPG	1.60	-			
2. LR	1.88	-.29 (.24)	-		
3. MR	2.29	-.67** (.65)	-.38* (.39)	-	
4. PG	2.06	-.46** (.43)	-.17 (.17)	.21 (.24)	-

*p< .05, **p<.01

Note. NPG=non-problem gambler; LR=low-risk gambler; MR=moderate-risk gambler; PG=problem gambler

10.4.7 Impact of gambling advertising

To examine the association between problem gambling severity categories and advertising impact, a series of one-way ANOVAS was conducted (Table 10.9). Due to the unequal variances of the gambling categories, Welch F statistics were reported (Field, 2013). Post hoc analyses using Games-Howell was used to examine the differences between the gambling categories (Table 10.10). Next, a series of multiple regression were conducted to examine the association between the domains of advertising impact (involvement, awareness, and knowledge). Involvement (Cronbach's alpha=.85) and knowledge (Cronbach's alpha=.93)

showed good internal consistency and awareness showed an acceptable level (Ursachi et al., 2015) of consistency (Cronbach's alpha=.62).

Table 10.9

Differences in advertising impact and advertising exposure between non-problem, low-risk, moderate-risk and problem gamblers

Advertising impact factor index	All	Non-problem	Low-risk	Moderate-risk	Problem gambler	Welch *F*	ω^2
Involvement	12.34 (4.45)	9.97 (3.87)	11.11 (3.92)	12.60 (4.10)	15.60 (3.54)	79.86*	.26
Awareness	4.39 (1.55)	3.80 (1.43)	4.40 (1.52)	4.90 (1.49)	4.69 (1.54)	17.84*	.07
Knowledge	5.80 (2.19)	5.56 (2.31)	5.32 (2.34)	5.90 (2.13)	6.35 (1.85)	7.06*	.03

*Significant at the Bonferroni corrected level of p=.017

Significant main effects were found for all three advertising factors (Table 10.9). These are discussed in further detail below.

10.4.8.1 Gambling Involvement

The ANOVA results showed a significant difference between the four groups for involvement, $F(3,312.92)=79.86$, $p<.01$, $\omega^{2=}.26$. Problem gamblers (M=15.60, SD=3.54) reported significantly more perceived involvement than moderate-risk gamblers (M=12.60, SD=4.10), low-risk gamblers (M=11.11, SD=3.92), and non-problem gamblers (M=9.97, SD=3.87). Significant effect sizes were .78, 1.20 and 1.51, respectively. Moderate-risk gamblers reported significantly higher perceived involvement than low-risk and non-problem gambling groups, with effect sizes of .37 and .66. Finally, low-risk gamblers reported higher perceived involvement that non-problem gamblers, with an effect size of .29.

10.4.8.2 Gambling advertising awareness

The ANOVA results show a significant difference between the four groups for awareness Welch's $F(3, 316.95)=17.84$, $p.<01$, $\omega^{2=}.07$. Problem gamblers (M=4.69, SD=1.54) reported significantly higher awareness of gambling advertisements than non-problem gamblers (M=3.80, SD=1.43), with a significant effect size of .60. Moderate-risk gamblers (M=4.90, SD=1.49) reported higher awareness than low-risk gamblers (M=4.40, SD=1.52) and non-problem gamblers. The significant effect sizes were .33 and .75, respectively. Low-risk gamblers reported significantly higher awareness than non-problem gamblers, with a significant effect size of .41

10.4.8.3 Gambling knowledge

The ANOVA results show a significant difference between the four groups for knowledge, $F(3, 313.38)=7.96$, $p<.01$, $\omega^{2=}.03$. Problem gamblers (M=6.35, SD=1.85) reported significantly higher knowledge of gambling advertisements than low-risk (M=5.32, SD=2.34) and non-problem gamblers (M=5.56, SD=2.31). The significant effect sizes were .49 and .38, respectively.

Table 10.10

Post hoc tests showing the differences in advertising impact between non-problem, low-risk, moderate-risk and problem gamblers

Advertising domain	Mean	Mean differences (effect sizes are indicated in parentheses)			
Involvement		1	2	3	4
1. NPG	29.77	-			
2. LR	29.83	-1.16* (.29)	-		
3. MR	32.41	-2.66** (.66)	-1.50* (.37)	-	
4. PG	35.56	-5.62** (1.51)	4.46**(1.20)	2.96** (.78)	-
Awareness					
1. NPG	9.19	-			
2. LR	9.31	-.61** (.41)	-		
3. MR	10.46	-1.11** (.75)	-.50* (.33)	-	
4. PG	12.18	-.92** (.60)	-.30 (.19)	.20 (.14)	-
Knowledge					

1. NPG	11.56	-			
2. LR	11.64	.24 (.10)	-		
3. MR	12.69	-.33 (.15)	-.57 (.26)	-	
4. PG	12.18	-.78** (.38)	-1.02** (.49)	.45 (.23)	-

*p< .05, **p<.01

Note. NPG=non-problem gambler; LR=low-risk gambler; MR=moderate-risk gambler; PG=problem gambler

Next, three multiple linear regression analyses were conducted. In each analysis, each one of the gambling advertising impact indices was the dependent variable and gender, age, the advertising exposure index, and problem gambling score were entered simultaneously as independent variables (forced entry). Assumptions for conducting multiple regression were satisfied: unbounded dependent variables, imperfect multicollinearity of independent variables (r- values between -.14 and .30, variance inflation factor values between 1.03 and 1.04, minimum tolerance value .97), independent residuals (Dubin-Watson statistics between 1.90 and 2.05), and homoscedasticity.

Table 10.11

Multiple linear regressions of advertising impact

	Involvement				Awareness				Knowledge			
Independent variables	*B*	*SE*	β	*t*	*B*	*SE*	β	*t*	*B*	*SE*	β	*t*
Constant	11.25	.64	-	17.56**	4.54	.34	-	13.55**	5.27	.48	-	11.03**
Gambling problems	.25	.02	.38	10.34**	.034	.01	.15	3.54**	.03	.01	.11	2.47*
Advertising exposure	.11	.02	.17	4.51**	.01	.01	.06	1.49	.05	.01	.14	3.34**
Age	-.06	.01	-.15	-4.36**	-.19	.01	.15	-3.70**	-.01	.01	-.07	-1.60
Gender[a]	.86	.41	.08	2.10*	-.15	.16	-.04	.94	.09	.23	.02	.39
	adj. R^2=.28; F(4, 600)=57.43**				adj. R^2=.07; F(4, 600)=10.86**				adj. R^2=.05; F(4, 600)=7.76**			

[a]male=0, female=1

*p<.05, **p<.01

Advertising exposure, age and gambling problems were associated with all factors of advertising impact, while gender was only associated with the factor involvement (Table 10.11). Overall, the associations of the independent variables with advertising impacts were strongest for involvement (adj. R^2=.28), then knowledge (adj. R^2=.05), and awareness (adj. R^2=.07). The results indicated that female bettors were more likely than males to report that advertising increased their involvement with gambling (β=.08). In terms of age, younger participants were more likely than older participants to report that advertising increased their gambling involvement (β=-.15) and knowledge (β=-.07). In relation to gambling problems, the findings indicate that those with higher PGSI score were more likely to report that advertising increased their involvement in gambling (β=.38), awareness of gambling adverts (β=.15), and knowledge of gambling advertising (β=.11). Regarding advertising exposure, participants who reported more frequent exposure to sports betting advertising were also more likely to report that advertising increased their involvement in gambling (β=.17), and their knowledge and gambling options and operators (β=.14).

10.4.9 Impulsivity

The PGSI scores and BIS-15 subscales were compared using correlation analysis, followed by a series of one-way ANOVAs and by post hoc tests (Games-Howell) to ascertain the direction of differences. Due to the unequal variances of the gambling categories, Welch F statistics are reported (Field, 2013). Spearman's rho correlations were used to calculate correlations between variables. Finally, a multiple regression was conducted to examine whether components of impulsivity (non-planning, motor and attentional) had any predictive value for problem gambling.

Average scores were calculated for each scale. Internal consistency for each scale was adequate (Ursachi et al., 2015) in the present sample: attentional (α=.78); motor (α=.74); non-planning (α=.69). Results of the correlation analysis (Table 10.12) show a moderately significant association between impulsivity (overall BIS-15) and the PGSI scale (r=.39, p<.001). Problem gambling severity scores were also significantly associated with the BIS-15 subscales. The strongest association was between PGSI scores and motor impulsivity (r=.37, p<.001). Non-planning attentional and attentional impulsivity were also associated with PGSI scores (r=.32, p<.001; r=.28, p<.001, respectively).

Table 10.12

Spearman's Rho correlations among impulsivity domains and problem gambling severity

	Range	*M*	*SD*	r_s
Motor	5- 20	10.31	2.93	.37*
Non-planning	6-23	12.47	3.31	.32*
Attentional	4-20	8.47	2.50	.28*
BIS-15 total score	18-52	31.94	6.45	.39*

**p*<.001

10.4.9.1 BIS-15 total score

The ANOVA results (Table 10.13) show a significant difference between the four groups for the overall BIS-15, $F(3, 314{,}16)=39.39$, $p<.001$, $\omega^2=.15$. Post hoc tests using Games-Howell indicated that problem gamblers (M=35.56, SD=5.69) scored significantly higher on the BIS-15 than moderate-risk gamblers (M=32.41, SD=6.21), low-risk gamblers (M=29.83), and non-problem gamblers (M=29.77, SD=6.02). The significant effect sizes were .53, .97, and .99 respectively. Moderate-risk gamblers' BIS-15 score was significantly higher than that of low-risk and non-problem gamblers, with effect sizes of .42 and .43, respectively.

Table 10.13

Differences in impulsivity and domains of impulsivity between non-problem, low-risk, moderate-risk and problem gamblers

	All sample	No-risk	Low-risk	Moderate-risk	Problem gambler	Welch *F*	ω^2
BIS-15 total	31.94 (6.45)	29.77 (6.02)	29.83 (6.00)	32.41 (6.21)	35.56 (5.69)	40.55*	.15
Motor impulsivity	10.31 (2.93)	9.19 (2.55)	9.31 (2.51)	10.46 (2.79)	12.18 (2.76)	24.54*	.16
Non-planning	12.47 (3.31)	11.56 (3.22)	11.64 (3.33)	12.69 (3.34)	13.95 (2.80)	16.67*	.09
Attentional impulsivity	8.47 (2.49)	7.83 (2.48)	7.92 (2.29)	8.75 (2.41)	9.40 (2.42)	39.39*	.07

*Significant at the Bonferroni corrected value of p=.01

10.4.9.2 Motor impulsivity

As shown in Table 10.14, there was a significant difference between problem gambling categories and reported motor impulsivity at the p<.05 level for the four conditions Welch's $F(3, 316.10)=40.55$, p<.001), $\omega^2=.16$. Post hoc tests indicated that problem gamblers reported higher motor impulsivity (M=12.18, SD=2.76) than moderate-risk gamblers (M=10.46, SD=2.79), low-risk gamblers (M=9.31, SD=2.51) and non-problem gamblers (M=9.19, SD=2.55), with significant effect sizes of .62, 1.09 and 1.13, respectively. Moderate-risk gamblers also reported significantly higher motor impulsivity than low-risk gamblers, with an effect size of .43.

10.4.9.3 Non-planning impulsivity

There was a significant effect of problem gambling category on reported motor impulsivity at the p<.05 level for the four conditions, $F(3, 311.15)=24.54$, p<.001), $\omega^2=.09$. Post hoc tests indicated that problem gamblers reported higher scores on non-planning impulsivity (M=13.95, SD=2.80) than moderate-risk gamblers (M=12.69, SD=3.34), low-risk gamblers (M=11.64, SD=3.33) and non-problem gamblers (M=11.56, SD=3.22). The significant effect sizes were .41, .75 and .79, respectively. Moderate-risk gamblers also reported significantly higher non-planning impulsivity than non-problem gamblers, with an effect size of .34

10.4.9.4 Attentional impulsivity

There was a significant effect of problem gambling category on reported attentional impulsivity at the p<.05 level for the four conditions, $F(3, 318.40)=16.67$, p=.001), $\omega^2=.07$. Problem gamblers reported significantly higher attentional impulsivity (M=9.40, SD=2.42) than low-risk gamblers (M=7.92, SD=2.29) and non-problem gamblers (M=7.83, SD=2.48). The significant effect sizes were .63 and .64, respectively. Moderate-risk gamblers (M=8.75, SD=2.41) scored significantly higher than non-problem gamblers and low-risk gamblers, with significant effect sizes of .38 and .35, respectively.

Table 10.14

Post hoc comparisons for impulsivity scores between problem gambling categories

	Mean	Mean differences

		(effect sizes are indicated in parentheses)			
BIS-15 total score		1	2	3	4
1. NPG	29.77	-			
2. LR	29.83	-.06 (.01)	-		
3. MR	32.41	-2.63** (.43)	-2.57** (.42)	-	
4. PG	35.56	-5.79** (.99)	-5.72** (.97)	-3.16** (.53)	-
Motor					
1. NPG	9.19	-			
2. LR	9.31	.11 (.05)	-		
3. MR	10.46	-.56 (.48)	-.67* (.43)	-	
4. PG	12.18	-1.81** (1.13)	-1.93** (1.09)	1.26** (.62)	-
Non planning					
1. NPG	11.56	-			
2. LR	11.64	-.07 (.02)	-		
3. MR	12.69	-1.13* (.34)	-1.05 (.31)	-	
4. PG	12.18	-2.36** (.79)	-2.29**(.75)	-1.23**(.41)	-
Attentional					
1. NPG	7.83	-			
2. LR	7.92	-.09 (.04)	-		
3. MR	8.75	-.92** (.38)	-.84* (.35)	-	
4. PG	9.40	-1.56** (.64)	-1.48** (.63)	-.64 (.27)	-

Note. NPG=non-problem gambler; LR=low-risk gambler; MR=moderate-risk gambler; PG=problem gambler

*p<.05, **p<.01

10.4.10 Multiple regression analysis predicting impulsivity among online sports bettors

Prior to conducting the multiple regression analysis predicting impulsivity among online sports bettors, the relevant assumptions of this statistical analysis were tested. Tests to see if the data met the assumption of collinearity indicated that multicollinearity was not a concern (non-planning impulsivity, tolerance=.54, VIF=1.87; motor impulsivity, tolerance=.59, VIF=1.77; attentional impulsivity, tolerance=.76, VIF=1.31). Correlation coefficients identified the highest correlation to be .65. The scatterplot of standardized residuals against predicted (fitted) values showed that the data met the assumptions of homogeneity of variance and linearity. The data also met the assumption of non-zero variances (PGSI scores, variance=48.00; motor impulsivity, variance=8.61; non-planning, variance=10.94; attentional impulsivity, variance=6.23). The histogram of standardised residuals demonstrated that the data contained approximately normally distributed errors. In addition, the normal P-P plot of standardised residuals indicated that the points were not completely on the line, but approximately normal with minimal skew. The scatterplot of standardized residuals against predicted (fitted) values showed that the data met the assumptions of homogeneity of variance and linearity.

Table 10.15

Regression analysis predicting problem gambling severity

	B	*SE*	β	*t*
Constant	-11.33	1.43	-	-7.95*
Non planning	.00	.10	.00	.004
Attentional impulsivity	.39	.12	.14	3.30*
Motor impulsivity	1.24	.17	.36	7.48*

*p<.01

A multiple regression model, including the three BIS-15 subscales, was conducted to determine whether components of impulsivity could predict PGSI scores (Table 10.15). Using the enter method, it was found that all three domains for impulsivity explained a significant amount of variance in PGSI scores ($F(3, 627)=48.33$, $p<.01$, $R^2=.19$, $R^2_{\text{Adjusted}}=.18$). Therefore, this model showed that these variables (attentional impulsivity, non-planning and motor impulsivity) accounted for 18% of the variance of PGSI scores.

The analysis showed that non-planning did not significantly predict PGSI scores (β=.00, t(630)=.004, p=1). However, attentional impulsivity (β=.39, t(630)=3.30, p=.01) and motor impulsivity also significantly predicted PGSI scores (β=1.24, t(630)=7.48, p<.001).

10.4.11 Characteristics of online sports bettors: A multiple regression

A multiple regression using the enter method was conducted to identify significant predictors of problem gambling severity scores. The predictor variables entered into the model were: age, gender, work status, marital status, non-planning impulsivity, attentional impulsivity, motor impulsivity, advertising knowledge, advertising awareness, advertising involvement, exposure to gambling advertising, promotion uptake, betting device, betting location, 'cash out' use (yes/no), in-play betting frequency and number of online gambling accounts. Variables identified in Chapter 6 were also included. These included sports betting motivations (winning, social, affect regulation, pleasure, and mastery). In addition, the betting platform groups that were identified using the LCA were also included. These were online bettors, multi-mode offline bettors, multi-mode online bettors, mixed mode bettors, and other.

The tolerance and VIF indices were above .33 and lower than 3.01 respectively, indicating that multicollinearity was not an issue. The data met the assumption of independent errors (Durbin-Watson value=1.49). The histogram of standardised residuals indicated that the data contained approximately normally distributed errors. The data also met the assumption of non-zero variances.

Table 10.16

Final regression analyses predicting problem gambling severity

	B	SE	β	t
R^2=.60, *p*<.001				
Demographics				
Age	-.02	.25	-.04	-.83
Gender[a]	.88	.59	.05	1.51
Education[a]	.05	.46	.003	.10
Employment[a] (student)	-.19	.84	-.008	-.22
Employment[a] (retired)	.66	1.24	.02	.53
Employment[a] (unemployed)	-.25	1.15	-.01	-.30

Employment[a] (part-time)	.28	.92	.01	.31
Employment[a] (other)	.42	1.01	.01	.42
Relationship[a] status (married)	.53	.55	.04	.97
Relationship[a] status (divorced)	.12	1.38	.003	.09
Motivations				
Winning	.26	.13	.07	2.01
Social	.39	.20	.10	1.90
Pleasure	**-.60**	**.21**	**-.10**	**-2.80****
Mastery	.14	.16	.04	.88
Affect regulation	**.75**	**.11**	**.34**	**6.70****
Impulsivity				
Motor	**.41**	**.15**	**.12**	**2.82****
Non-planning	.02	.09	.01	.27
Attentional	.05	.11	.02	.50
Advertising impact				
Involvement	**.16**	**.07**	**.10**	**2.11***
Awareness	.26	.17	.06	1.58
Knowledge	-.03	.11	-.01	-.23
Advertising exposure	-.01	.04	-.01	-.18
Promotion uptake	.02	.02	.05	1.20
Sports Betting behaviour				
In-play betting frequency	**.40**	**.11**	**.13**	**3.61****
Cash out	**1.55**	**.51**	**.09**	**3.02****
Number of online gambling accounts	-.02	.17	-.004	-.12
Device[a] (laptop)	**1.26**	**.51**	**.09**	**2.46****
Device[a] (tablet)	.51	1.36	.01	.36
Location[a] (work)	**2.85**	**.77**	**.12**	**3.70****

Location[a] (pub)	.22	1.17	.01	.19
Platform				
Multi-mode offline	1.41	.73	.07	1.92
Mixed mode	**2.11**	**.58**	**.12**	**3.63****
Other	.43	1.16	.01	.37
Multi-mode online	.71	.55	.04	1.29

Note. Bold text indicates statistically significant predictors. *p<.05, **p<.01 [a]Dummy variable procedure can be found in Appendix I.

The regression model estimation results are displayed in Table 10.16. The model as a whole was statistically significant (F(34, 471)=20.71, p<.001) with 60% of the variance in problem gambling severity explained by the set of independent variables. When controlling for all other variables in the model, problem gambling severity scores were positively associated with: affect regulation motivations for sports betting (β=.34, p<.001), motor impulsivity (β=.16, p=.01), advertising involvement (β=.10, p=.04), in-play betting frequency (β=.13, p<.001), cash out use (β=.09, p=.003), using a laptop to place sports bets (β=.09, p=.014), placing bets at work (β=.12, p<.001) and placing bets both in person at a venue and online (β=.12, p<.001). Sports betting for pleasure was significantly but negatively associated with problem gambling severity score (β=-.10, p=.01).

10.5 Discussion

The aim of the study in this chapter was to empirically examine which factors might predict problem gambling among sports bettors. More specifically, the present chapter examined the relationship between problem gambling and several previously identified risk factors: sports betting advertising, advertising exposure, sports betting promotion uptake, newer features of online sports betting (in-play betting and 'cash out'), methods of sports betting, sports betting motivations, and trait impulsivity. The overall goal was to distinguish which risk factors are likely to play a key role in increasing risk for sports bettors experiencing gambling-related harm. The results indicated that all of these aforementioned factors were positively associated with problem gambling. However, when these risk factors were entered simultaneously into a multiple regression model, only sports betting advertising involvement, in-play betting, 'cash out' use, betting on a laptop, betting at work, 'mixed mode gambling', motor impulsivity, and certain sports betting motivations (affect regulation and pleasure) significantly predicted problem gambling.

10.5.1 Sports betting behaviour and problem gambling

Several risk factors were identified in terms of sports betting behaviours. Non-problem gamblers were more likely to report having one online gambling account, while problem gamblers were more likely to report having three. This supports research that has suggested that gamblers with multiple online accounts have a higher likelihood of being a problem gambler (Gainsbury et al., 2015g; Hing et al., 2014a). The results differ slightly from findings by Russell et al. (2019b) who reported that low-risk and moderate-risk gamblers had significantly higher numbers of gambling accounts with different operators but found no significant difference between problem gamblers and non-problem gamblers. However, a separate study reported no relationship between the number of accounts with different sports betting providers and problem gambling severity (Hing et al., 2016a). Interestingly, participants were able to indicate whether they had five or more accounts, but having only three accounts was associated with being a problem gambler. Perhaps these gamblers favoured the simplicity of having three accounts, the providers may have had better odds, or more preferable promotions. An alternative explanation is that these problem gamblers may have had a higher number of accounts in the past, but closed, or self-excluded due to responsible gambling-related reasons. Further research is required to support these assumptions.

Placing online bets using a smartphone was the most popular device type, with over half of the participants stating that they primarily use a smartphone to place their online bets. The present study found that problem gamblers were most likely to use a laptop (53.19%) to place their sports bets. The second most popular device type of problem gamblers was using a mobile device such as a tablet (42.02%). The mobile phone betting results are very similar to that of Lopez-Gonzalez et al. (2019a), who reported that 42.8% of problem gamblers use their smartphone to bet. However, in that same study, the authors reported that only 17.9% of problem gamblers used a laptop to place their bets (Lopez-Gonzalez et al., 2019a). There could be several reasons why problem gamblers in the present sample favoured placing their bets using a laptop, such as the security and speed of using a laptop or computer, the betting interface may be more comfortable to use, or the size of the screen and the usability of having different tabs open at once may make it easier for the individual to observe and place bets on several events at the same time. Individuals may already be on their laptop at work, and therefore it is easier to access a sports book on the device they are already using. Further research is required to support these possible explanations.

The present study found that problem gamblers were more likely than other gambling groups to place sports bets while at work. The Gambling Commission's national participation survey (2017) reported that individuals aged under 35 years were more likely to gamble outside of the home, with 22% of online gamblers aged 18-24 years saying that they have gambled at work (Gambling Commission, 2017). A qualitative study by Lopez-Gonzalez et al. (2020d) suggested that gambling in the workplace is facilitated by the work environment, especially in male-dominated contexts. Overall, there is a lack of research about gambling in the workplace and its associated consequences (Griffiths, 2009).

10.5.2 Structural characteristics of sports betting and problem gambling

This part of the present study sought to examine the relationship between online betting features and gambling problems. The use of newer online betting features, such as in-play betting and the use of the 'cash out' feature was common in the present sample. Three quarters of participants had used the 'cash out' feature, while 65% of participants had placed a bet in-play. In line with previous research, in-play betting was found to be associated with problem gambling (Gainsbury et al., 2021; Hing et al., 2018; LaPlante et al., 2014; Lopez-Gonzalez et al., 2019a; Russell et al., 2019c). Not only were problem and moderate-risk gamblers more likely to place their bets during a game, they engaged in this form of gambling more frequently than non-problem gamblers. Two-fifths of in-play bettors (39%) met the criteria for problem gambling (compared to 11% of non in-play bettors), and only 20% of in-play bettors were non-problem gamblers. Overall, in-play betting appears to appeal to problem gamblers more than other gambling risk groups or non-problem gamblers.

Unsurprisingly, self-perceived time spent online sports betting was also found to be significantly higher for problem gamblers and moderate-risk gamblers. In addition, time spent in-play betting was associated with those being categorised as problem gamblers. These findings align with previous research based on both behavioural-tracking data from operators and cross-sectional findings (LaBrie & Shaffer, 2011; LaPlante et al., 2014; Lopez-Gonzalez et al., 2019a).

One interpretation of this finding may relate to the structural characteristics of the activity and explain why individuals experiencing gambling problems may be more likely to engage in in-play betting than those who are not. In-play betting contributes to the transformation of sports betting from a discontinuous to continuous gambling activity (Griffiths & Auer, 2013). There are quicker betting cycles, whereby the outcome of the event potentially occurs in a much

shorter window, providing faster reinforcement (Auer & Griffiths, 2016; Lamont et al., 2016; Russell et al., 2019c). Therefore, sports bettors with gambling problems may be attracted to this more immediate, impulsive, and less planned form of gambling (Griffiths & Auer, 2013; Hing et al., 2017c, 2018; Lamont et al., 2016; Lopez-Gonzalez & Griffiths, 2016).

In-play betting can facilitate chasing behaviours for individuals experiencing gambling problems (Parke & Parke, 2019). More specifically, individuals experiencing gambling problems have reported that shorter event duration and higher event frequency, and the swiftness of feedback on gambling results, enable sports bettors to engage in loss-chasing behaviours or immediately re-stake winnings (Parke & Parke, 2019). Furthermore, in-play betting may exploit an individual's cognitive biases, where they have an elevated view of skill for this form of gambling activity (Lopez-Gonzalez et al., 2017a; Lopez-Gonzalez & Griffiths, 2016). One such cognitive bias is the 'illusion of control' and individuals experiencing gambling problemsmay overestimate how much control they have over fundamentally random events (Goodie & Fortune, 2013).

Problem gamblers also reported higher use of the 'cash out' feature, which is a prominent feature of in-play betting. More specifically, over 90% of problem gamblers in the present study indicated that they used the 'cash out' feature, in comparison to only 66% of non-problem gamblers. Overall, problem gamblers were significantly more likely to use the 'cash out' feature than low-risk gamblers and non-problem gamblers. This supports findings by Lopez-Gonzalez et al. (2019a) who found that problem gamblers reported higher use of 'cash out' feature.

One reason that the 'cash out' feature may appeal to individuals experiencing gambling problems is due to the level of bettor involvement that it facilitates. Bettor involvement refers to the actual, potential or perceived control that sports bettors have over their wagers. Newall et al. (2021a) argued that the 'cash out' feature is a structural characteristic that relates to bettor involvement. Cash out betting, in comparison to standard betting, can be viewed as increased active bettor involvement (Newall et al., 2021a). 'Cash out' may be related to problem gambling due to the potential to shorten pay-out intervals (by "cashing out" a bet early), because an individual who has cashed out a bet during the event has the opportunity to place further bets (Lopez-Gonzalez et al., 2017a; Newall et al., 2021a). Newall et al. (2021a) argue that 'cash out' provides an element of personal agency which may be particularly appeal to sports bettors with gambling problems because of their common endorsement of illusion of

control beliefs. In addition, the marketing of the cash out functionality often highlights it is as a control-enhancing mechanism for bettors (Lopez-Gonzalez & Griffiths, 2017a).

Cash out may increase the potential for problem gambling, because due to the nature of 'cashing out' a bet, decisions must often be made impulsively and within emotionally heightened contexts (Lopez-Gonzalez et al., 2017a). Therefore, the 'cash out' feature may increase problematic behaviours among some gamblers by stimulating impulsive actions.

Due to the correlational nature of the present study, causal directions between the use of in-play betting and 'cash-out', and problem gambling are unclear. Overall, the results suggest that further research is required into the harmful impact that structural characteristics of online betting may have on a person developing gambling problems (Griffiths, 1993; Newall et al., 2021a; Parke & Griffiths, 2007).

10.5.3 Sports betting wagering inducements and problem gambling

This part of the present study sought to examine the relationship between advertising impact, exposure, promotion uptake and problem gambling severity. The most frequently used sports betting promotions by bettors in the present study were boosted/enhanced odds and in-play betting odds. This supports previous qualitative research that has identified that sports bettors are particularly attracted to the marketing of these betting odds (Killick & Griffiths, 2020b). Studies into the content of UK football gambling advertisements has previously found that advertisements for in-play betting on football matches constitute a large proportion of the bets that are promoted on television (Newall et al., 2015, 2017, 2019a). Similarly, a study found that in-play betting was depicted in nearly half of 135 British and Spanish television advertisements (Lopez-Gonzalez et al., 2018c). Therefore, the popularity of in-play betting promotions may be in part due to the large volume of advertising that participants are exposed to.

The uptake of all types of sports betting promotions was positively correlated with problem gambling severity. This finding supports previous research that has found that the uptake of sports betting inducements is associated with gambling problems (Hing et al., 2015c; Newall et al., 2021b). Previous research has identified that promotions prompt consumption particularly among at-risk and problem gamblers by encouraging them to bet, and by activating urges and craving (Binde, 2014; Hing et al., 2014b, e; Lopez-Gonzalez et al., 2017b). It has also been argued that promotions aimed at in-play betting (for example, the provision of live-

odds on screen) reinforce cognitive biases associated with erroneous probabilistic thinking, often encouraging impulsive and urgent betting (Newall et al., 2018). Previously reported influences of wagering marketing and problem gambling severity have included increased betting behaviour, betting more than intended and more positive emotional and cognitive responses (Hing et al., 2014d, b; Newall et al., 2021b; Sproston et al. 2015).

Challet-Bouju et al. (2020) argued that financial motives, which are central to explaining paths to gambling problems, may explain why at-risk gamblers seem to exhibit more extreme responses to incentives. Challet-Bouju et al. (2020) found that wagering inducement use increased gambling expectancies and loss of control and therefore these emotional effects may exacerbate gambling problems. A qualitative study found that treatment-seeking gamblers, but not general population gamblers, reported increased gambling in response to bonus offers, and felt tempted to drop intentions to control their gambling (Hing et al., 2014e).

The higher use of sports betting wagering inducements by individuals with higher PGSI scores may in part be explained by their attitudes that they hold towards advertising techniques used by sports betting operators. Previous research has reported that positive attitudes towards promotional techniques and gambling sponsors was predictive of problem gambling severity (Hing et al., 2017e). Further research would be required in order to confirm whether this is the case in the present study.

10.5.4 Impacts of gambling advertising and problem gambling

Overall, the findings indicated that individuals with a higher PGSI score were more likely to report that sports betting advertising increased their gambling knowledge and involvement. Those with a higher PGSI score also reported a higher awareness of gambling advertisements. These findings are consistent with previous research that has shown that the impacts of advertising on gambling are typically highest among moderate-risk gamblers and problem gamblers compared to low-risk gamblers and non-problem gamblers (Binde, 2009; Gainsbury et al., 2016b; Hanss et al., 2015; Hing et al., 2015d; Sproston et al., 2015).

Differences in the impact of gambling advertising was found amongst the various gambling groups. At-risk gamblers and problem gamblers were more likely than non-problem gamblers to report that advertising increased their involvement with gambling. Problem gamblers were also more likely to agree that gambling advertising increased their knowledge of gambling

products and awareness of gambling advertisements, in comparison to at-risk and non-problem gamblers.

Advertising exposure, age, and gambling problems were associated with all factors of advertising impact, while gender was only associated with gambling involvement. More specifically, female bettors were more likely to report that advertising increased their gambling involvement. This finding differs from Hanss et al. (2015) who suggested that men were more likely than women to report that advertising had an impact on their gambling involvement and knowledge, and there were no gender differences in terms of advertising awareness. The present study found no gender differences between awareness and knowledge impacts of gambling advertising. However, explanations as to why only females reported that sports betting advertising increased their sports betting involvement remains unclear. A large amount of recent research has focused on young men and sports betting, but there is limited research into the gambling behaviour of women. It should not be assumed that online bookmakers only target men with their advertising. Women may receive 'direct to consumer' forms of marketing that include SMS message and emails after signing up for gambling accounts (McCarthy et al., 2018). Moreover, exposure to sports betting advertisements may have a normalising influence on women's attitudes towards newer forms of gambling, such as online sports betting (McCarthy et al., 2018).

Younger participants were more likely to report that advertising increased their gambling involvement and knowledge, but not awareness of gambling advertising. These findings are similar to that of Hanss et al. (2015), who reported that being younger was associated with stronger perceived impacts on gambling knowledge and involvement, but lower awareness of gambling advertising. Previous research into how the impact of gambling advertising differs between age groups has so far been mixed. For example, one Finnish survey (n=7,186) found no significant differences in the impact of gambling advertising between different age groups (Salonen et al., 2018). Similarly, Quinn et al. (2019), using the Impact of Gambling Advertising Scale (IGAS; Hanss et al., 2015), did not find a significant relationship between any of the three subdomains of the impact of gambling advertising and age of the participant. Research conducted in the UK by IPSOS Mori (2020) found that differences in gambling exposure and interaction with gambling advertising was not associated with differences in age between those aged 11-17 years and those aged 18-24 years. One possible explanation for the findings in the present study is that sports betting advertising is often targeted at young males (Deans et al.,

2016b) and this may therefore account for increased awareness and knowledge of advertising for those younger in age.

Problem gamblers and moderate-risk gamblers were significantly more likely to report exposure to gambling advertising across multiple media channels, and this exposure was positively related to higher levels of gambling involvement and knowledge of gambling options. In a recent meta-analysis, Bouguettaya et al. (2020) concluded that there is a significant positive relationship between exposure to gambling advertising and gambling-related behaviour. Cross-sectional research shows that greater exposure to gambling advertising (both self-report and proxy measures) is associated with problem gambling behaviour (Hanss et al., 2015; Russell et al., 2018). It has been suggested that individuals experiencing gambling problems may be more influenced by gambling advertising due to being exposed to it more frequently (Derevensky et al., 2007). The findings demonstrated that that problem gamblers reported more frequent exposure to sports betting gambling advertising than moderate-risk gamblers, low-risk gamblers and non-problem gamblers. Therefore, the finding that problem gamblers report stronger impacts of advertising on gambling involvement compared to at-risk gamblers and non-problem gamblers may be attributed to differences in advertising exposure. Another explanation is that moderate-risk gamblers are more receptive and attentive to gambling advertising and subsequently find it to recall seeing them (Binde, 2007; Lamont et al., 2011).

One interesting finding is that although multiple types of gambling advertising exposure increased with problem gambling severity (e.g., radio advertising, email advertising, and direct text messages), exposure to television advertising and internet pop-ups was not positively associated with problem gambling. These findings are similar to those of Syvertsen et al. (2021), who reported non-significant effect sizes (for television advertising) and negligible effect sizes (internet advertising) between different gambling categories. The present findings, and the findings from Syvertsen et al. (2021), suggest that gamblers from different risk categories report similar amounts of gambling advertising exposure from the television and internet. These findings are surprising because in relation to internet gambling, individuals with problem gambling may be more inclined to follow sports betting-related social media accounts and therefore, be exposed to more gambling-related advertisements and pop-ups when they are using the internet (Syvertsen et al., 2021). This is possibly due to the fact that internet pop-up messages often require some action to remove them. Pop-ups may obscure content that the user intended to see, requiring the users to click on an icon in order to minimise it or exit from it

altogether. This placement may heighten the individual's attention, as they must interact with the advert to remove it, therefore accounting for the similarity in exposure between the gambling groups.

With regard to television gambling advertisements, this was the form of gambling advertising that participants reported the highest overall exposure to, but there was no difference in exposure between the gambling categories. Exposure to television gambling advertising is not restricted to the watching of live sporting games, and exposure can take place when viewing the sponsorship of daytime TV programmes, and when watching other genres on demand/catch up (IPSOS Mori, 2020). Therefore, other forms of exposure may be more targeted at sports bettors who already hold an account e.g., via direct marketing forms such as text-messages, email and invitation, whereas everyone is equally exposed to gambling advertisements regardless of whether or not they have previously gambled.

Individuals experiencing gambling problems, particularly those in treatment, are more likely to notice gambling advertising (Binde, 2009). Even if gambling advertising does not cause individuals to experience gambling problems, these individuals observe gambling advertisements more frequently, and are more likely to recall gambling advertising, which increases the risk that tempting marketing messages contribute to their excessive gambling (Derevensky et al., 2010). Another explanation as to why exposure to sports betting advertising may increase gambling participation is that exposure may affect individual's attitudes towards the advertisements (Lee et al., 2008). Previous research has found gambling advertising exposure to be positively associated with betting attitudes, intentions, and increases in gambling behaviour (Bouguettaya et al., 2020; Gainsbury et al., 2016b; Hing et al., 2014d, 2015d; Sproston et al., 2015).

Social learning (Bandura, 1977) is a mechanism which may be used by advertising exposure to increase gambling behaviour. Social learning theory posits that individuals learn behaviour observationally through modelling: they can learn about positive outcomes through personal experience, watching others, or by witnessing positive outcomes portrayed in the media (Bandura, 1986, 2001). This is discussed in further detail in Chapter 3. In advertising, sports betting is normally depicted as an adventurous, social activity (Deans et al., 2016b), and shows sports betting as a game of skill in which money can be won, enhancing illusions of control and lowering the perceived risk of betting (Lopez-Gonzalez et al., 2018a, 2018f). Because of

this positive depiction of advertising, frequency exposure may contribute to the development and reinforcement of gambling participation (Monaghan & Derevensky, 2008).

All participants in the sample reported that they were most frequently exposed to television sports betting advertisements, compared to other advertising channels. However, there was no significant difference in exposure to television advertising between the different gambling groups. Hing et al. (2017e) found similar results, that exposure to gambling promotions during televised sports was not a significant predictor of PGSI score. Hing et al. (2017e) argued that this is probably due to the unavoidability of exposure to marketing on this channel by all sports viewers, regardless of problem gambling status.

10.5.5 Impulsivity and problem gambling

The results showed that the BIS-15 total score, as well as the scores of the subscales (non-planning, attentional and motor impulsivity) was significantly higher among problem gamblers and moderate-risk gamblers, compared to low-risk and non-problem gamblers. This finding supports the existence of the widely reported positive association between impulsivity and problem gambling (e.g., Glicksohn et al., 2010; Lai et al., 2011; Mestre-Bach, 2020).

Of the three BIS-15 sub-scales, motor impulsivity was the subscale most highly correlated with PGSI scores. Motor impulsivity is the behavioural dimension of impulsivity and involves action without thinking, or acting on spur of the moment. Motor inhibition ability, and difficulties in delaying gratification and decision-making are associated with problems in behavioural regulation (Aragues et al., 2011; Dalley et al., 2011; Fineberg et al., 2010; Potenza & de Wit, 2010). This type of impulsivity has previously been found to be one of the features of problem gambling psychopathology, contributing to poor inhibitory control over gambling behaviours (Chowdhury et al., 2017; Roca et al., 2008).

High levels of trait motor impulsivity may show the unconsidered actions of betting, particularly online where gambling actions can occur immediately, encouraging bettors to places wagers impulsively, without prior thought. Among sports bettors, impulsivity has already been found to be a predictor of problem gambling (Hing et al., 2017c; Russell et al., 2019c). For example, Russell et al. (2019c) found that micro-event in-play bettors were more likely to have high trait impulsivity as assessed using the eight-item Barratt Impulsiveness Scale-Brief (BIS-Brief; Steinberg et al., 2013) and more impulsive sports bettors have been

characterised as having higher trait impulsiveness (Hing et al., 2017c). Additionally, one of several predictors of planning bets in advance of a match, rather than placing a bet during a match, was having a lower BIS-Brief score (i.e., having lower trait impulsiveness) (Hing et al., 2017c).

Research by Hing et al. (2018a) found evidence to suggest that impulsive-like betting, which included betting more than intended and no prior planning, in addition to there being more betting options that enable it such as in-play betting, present considerable risks for some sports bettors. Betting via smartphones is easily accessible and allows for immediate and instantaneous gambling, and allows for faster playing speeds, and therefore, may be particularly appealing to gamblers who are more likely to place bets on impulse (Deans et al., 2016a; Griffiths & Auer, 2013; Lopez-Gonzalez et al., 2019a).

10.5.6 Predictors of problem gambling in sports bettors

The purpose of this quantitative study has been to identify specific predictors of problem gambling severity among international sports bettors. A multiple regression was conducted in order to help distinguish which of the included factors are most likely to contribute to an increased probability of experiencing gambling-related harm. The regression analysis showed that 60% of the variance of problem gambling was attributable to nine variables: pleasure and affect regulation motives, motor impulsivity, involvement with gambling advertising, in-play betting, using the 'cash out' feature, using a laptop to bet, betting at work, and placing bets both in person and online ('mixed mode' gambling).

Controlling for several variables in the multiple regression, affect regulation motivations for sports betting was found to be a significant positive predictor of problem gambling severity, while sports betting for pleasure was found to negatively predict problem gambling severity. The pleasure motivation to gamble included items relating to gambling for excitement and for fun, while the affect regulation motive included items relating gambling for coping and positive affect upregulation reasons.

Sports betting is a common leisure activity. However, it can develop into problem gambling for some individuals, leading to serious harms. There is evidence to suggest that motivations to gamble may differ between problem and non-problem gamblers (e.g., Flack & Morris, 2015; Schellenberg et al., 2016). Therefore, self-determined forms of motivation may explain the

gambling behaviour of non-pathological gamblers who view gambling primarily as a leisure activity (Carruthers et al., 2006). Self-determination theory (SDT) (Deci & Ryan, 2000) distinguishes between intrinsic motivation, extrinsic motivation, and amotivation. Gambling may initially be motivated as a way of enjoying oneself and a way to socialize, but for some, the preoccupation turns increasingly to winning money and chasing losses (Griffiths & Delfabbro, 2001). Pathological gamblers have been found to be more likely than nonpathological gamblers to experience amotivation from gambling (Carruthers et al., 2006; Clarke, 2004; Ladoucer et al., 1997; Weib & Cox, 2005). It is a characteristic of gamblers who have lost their sense of control and choice over their gambling habits (Chantal & Vallerand, 1996). This is demonstrated by gamblers who continue to gamble with no real purpose, who have mentally disengaged and as something to do out of boredom, with little sense of meaning (Clarke & Clarkson, 2009).

According to Chantal et al. (1995), individuals who have intrinsic gambling motivations bet for excitement and fun, resulting in satisfaction and pleasure. Therefore, the sports bettors in the present study with lower PGSI scores and who gamble for pleasure may be intrinsically motivated to place sports bets because it is a leisure activity that they enjoy doing. Conversely, those with high PGSI scores in the present sample get little pleasure from gambling, and may therefore be amotivated. This may be due to a compulsion to bet and a perceived lack of control, which is one indication of gambling addiction (McCown & Chamberlin, 2000). It is possible that at one time gambling was rewarding and this put the addictive behaviours in motion (Ryan & Deci, 2000). However, over time, individuals can develop gambling tolerance, and no longer feel the same “thrill” or very little from the once enjoyable activity (McCown & Chamberlain, 2000).

The regression analysis indicated that individuals with higher PGSI scores were more motivated to gamble due to affect regulation reasons, which is consistent with the gambling research. Numerous previous cross-sectional quantitative studies have demonstrated that gambling as a way to escape problems or regulate internal states are prominent motives related to problematic gambling behaviour (Flack & Morris, 2015; Lam, 2007; Lee et al., 2007; Mathieu et al., 2018 Stewart & Zack, 2008). In order to escape from negative cognitions, individuals may cope by directing their attention to more immediate and pleasurable outcomes associated with gambling (Mathieu et al., 2020). Overall, the motivation findings indicate that

gamblers with lower PGSI scores gamble for recreational purposes, while those with higher PGSI scores gamble to avoid aversive mood states, and regulate their emotional state.

In the multiple regression controlling for other factors, motor impulsivity was found to significantly predict problem gambling. This finding mirrors that of Barrault and Bonnaire (2015) who used the BIS-11 measure of impulsivity to assess the relationship between the impulsivity facets and problem gambling among online poker players. They found that all domains of impulsivity were positively correlated with problem gambling severity. However, only motor impulsivity made a unique contribution to the regression model.

Motor impulsivity, also labelled as response impulsivity or impulsive action, involves impairments in delaying, suppressing or interrupting inappropriate responses (Hamilton et al., 2015; Chowdhury et al., 2017). Several studies suggest gambling severity is positively associated with motor impulsivity (Chowdhury et al., 2017; Brevers et al., 2012) and high levels of motor impulsivity have been associated with gambling disorder (Grant et al., 2010; Kertzman et al., 2008). Mestre-Bach et al. (2020) posited that motor impulsivity is related to a deficit in inhibitory control, which may contribute to difficulties in limiting or stopping gambling behaviour.

Impulsivity has been increasingly recognised as a factor in gambling disorder. Understanding which facets of impulsivity are associated with gambling involvement and gambling problems is important in order to develop suitable treatment strategies for those who require problem gambling support. The findings also indicate that advertising involvement, that is, where advertising is perceived to influence gambling interest, intention and actual gambling, was predictive of problem gambling behaviour. This finding aligns with previous research that problem gamblers report a stronger impact of gambling advertising on gambling involvement than recreational gamblers (Hanns et al., 2015; Syvertsen et al., 2021).

More frequent in-play betting and ‘cash out’ feature use was found to significantly predict higher PGSI scores. The findings support previous positive associations between the use of in-play betting, the ‘cash out’ feature, and problem gambling behaviour (Lopez-Gonzalez et al., 2017a, 2019a; Newall et al., 2021a; Parke & Parke, 2019; Russell et al., 2019c). However, the causal relationship between these variables remains unclear. It could be that at-risk gamblers

and problem gamblers are more likely to place impulsive bets in-play, or impulsively cash out bets, or that using these newer features of the online sports betting environment leads to the development of gambling problems. Betting at work and betting both in person and online were the variables that had the greatest effect on problem gambling severity scores in the regression model. Therefore, the results demonstrate that the gambling environment in which sports betting occurs is an important consideration in the explanation of problem gambling behaviour.

Much of the research to date has suggested that betting via a smartphone is associated with problem gambling behaviour (e.g., Gainsbury et al., 2016c; James et al., 2017, Lopez-Gonzalez et al., 2019a). For example, Gainsbury et al. (2016c) reported that individuals who chose to gamble online on a computer were less likely to have gambling problems than those who used a smartphone to gamble. In general, the previous literature has suggested that gambling on a mobile contains inherent risks due to the availability and accessibility of using this form of device, while gambling on a stationary computer may make it easier for individuals to control their gambling. This was not the case in the present study as gambling on a laptop was found to be a significant predictor of PGSI score. This result may be related to the finding that betting at work was also a significant predictor for problem gambling severity, and that those who are betting at work may also be using their work laptop or computer to gamble. More research is required to confirm whether this is the case.

Placing bets at work was found to be predictive of having a higher problem gambling severity score, whereas placing bets at home or at a bar/pub were not significant predictors of PGSI. There may be several explanations for this. The workplace environment may have the capacity to socially construct the normality of sports betting through peer influence (Lopez-Gonzalez et al., 2019c) and this could contribute to an increase in gambling-related harm. Problem gambling has often been described as a "hidden" addiction (Griffiths, 2006). It may be that engaging in gambling-related activities during working hours allows for those who are experiencing gambling-related problems to use the work environment as a shield to hide their problems from family members and friends. Rather than gambling in a more traditional social setting, such as bars and pubs, sports betting can be carried out at work in seclusion.

An additional situational factor that was significant was the mode of sports betting. More specifically, the present study found that participating in both internet sports betting and sports betting in person at a high-street bookmaker was predictive of having a higher score on the

PGSI measures, suggesting that those who bet solely online have a lower risk of being classified as problem gamblers. These findings align with previous research that has reported that 'mixed mode' gamblers demonstrate higher problem gambling severity scores than exclusive land-based and online gamblers (Blaszczynski et al., 2016; Gainsbury et al., 2015d; Papineau et al., 2018; Wardle et al., 2011a). Mixed mode gambling has also been found to be a predictor of both at-risk and problem gambling in adolescents (González-Roz et al., 2017). Gainsbury et al. (2015d) reported that mixed mode gamblers in addition to having the highest average problem gambling severity scores, were more likely to engage in multiple forms of gambling, and attribute gambling problems to sports betting more than any other group (i.e., internet gambling and land-based gamblers). It has been suggested that the relationship between 'mixed mode' gambling and at-risk gambling and problem gambling may be due to diverse and elevated participation among these gamblers (Baggio et al., 2016; Blaszczynski et al., 2016, Gainsbury et al., 2015d).

10.5.7 Practical implications

There are a number of implications arising from the findings of the present study at different levels. Features associated with the gambling environment; betting at work, mixed mode gambling, and online betting via a laptop device were found to have the highest predictive power for problem gambling. These findings highlight the importance of considering these factors when developing effective responsible gambling strategies.

Newer features of the online betting environment ('cash out' and in-play betting) were also identified as salient risk factors for problem gambling. These findings indicate that regulators and policy makers need to be aware of the potential risks due to this transformation of sports betting, and re-think how to protect gamblers from the potential harm caused by this new form of betting. The findings also suggest a need to further research the mechanisms by which in-play betting may cause harm.

The findings also indicated that individual factors, including impulsivity and certain sports betting motivations are related to problem gambling. Therefore, specific treatment strategies should be provided that are adjusted to suit an individual's needs. For example, they could place emphasis on higher rates of motor impulsivity in those categorised as problem gamblers, and consider strategies that help these gamblers to achieve greater control over their sports betting behaviour.

10.5.8 Limitations

There are several limitations of the study that should be mentioned. Firstly, the study relied on self-reported data that is subject to the typical recall biases. Of particular note, exposure to wagering advertising and promotion uptake relied on recall of exposure over long time periods. The cross-sectional design of the study does not allow for causal implications between the variables, despite the significant differences reported between the different gambling severity groups. With the aim of keeping the survey at a reasonable length, some potentially enlightening questions were left out. For example, additional gambling activities and questions on monetary spending (average amount wagered in a session; amount won; amount cashed out) were not included. Moreover, multiple forms of gambling have the potential to contribute to an individual's PGSI score. Individuals in the present sample had placed at least one sports bet in the past year in order to be included in the study but data from additional gambling activities was not collected. Therefore, it is not possible to say that the high PGSI scores are reflective only of problematic sports betting behaviour. Other limitations include the sample selection, which was over-representative of individuals categorised as problem gamblers, but which as a result enabled key analyses to be conducted with a relatively large number of problem gamblers.

10.6 Conclusion

Many correlates of sports betting problems reported in the literature were not significant when considered in a multiple regression model. The contribution of the present study is to highlight the risk factors that provide large and unique explanatory power. The findings showed that 'mixed mode' sports betting, betting at work, using a laptop to bet, and using the 'cash out' feature were risk factors that provided the largest explanatory power for problem gambling in a sample of sports bettors. These findings highlight the importance and need for further research that examines the structural and situational characteristics of online sports betting. Sports betting motivations and higher levels of trait impulsivity were also found to significantly predict problem gambling in the model. This suggests that future research also needs to consider the role of individual characteristics when designing preventative and treatment strategies to reduce or minimise problem gambling. Further understanding the interaction between sports betting risk factors may have significant implications for public policy and be used to inform successful harm reduction strategies.

Chapter 11: Conclusion

11.1 Summary of thesis aims and original contribution to knowledge

Sports betting is now the most popular online gambling activity in Europe, comprising of 41% of Europe's online gambling revenue (European Gaming & Betting Association, 2020). The recent growth of the online sports betting industry has been supported by the increasing accessibility and availability of online betting, largely due to an upsurge in the number of betting providers and platforms (such as the use of mobile apps and in-play betting). Now, over half of sports bets that are wagered in Europe (55%) are placed in-play (European Gaming & Betting Association, 2020). This modern form of sports betting has changed from what was previously a discontinuous form of gambling to a continuous form of gambling (Griffiths & Auer, 2013). The characteristics of in-play sports betting provide sports bettors with the facility to wager numerous times during a game, on hundreds, if not thousands of discrete events (National Council on Problem Gambling, 2020). This reduces the time between when the bet was placed and the reward, increasing the speed and frequency of gambling. This increased speed and event frequency may contribute to an increased risk of developing gambling-related problems (Griffiths, 2012; Harris & Griffiths, 2018).

Alongside increasing technological advancements, there has been an increase in the prevalence and pervasiveness of sports betting advertising. This advertising may encourage positive dispositions towards sports betting products and promote a degree of normality about sports betting (Gunter, 2019), as well as exacerbate the emotional and impulsive drivers of betting behaviour (Gamble Aware, 2018). The growth of gambling marketing and advertising, together with developments in technology, has resulted in concerns about the potentially negative effects of marketing and advertising, especially upon children, young people, and vulnerable individuals (Responsible Gambling Strategy Board, 2016). Therefore, it is important to understand how newer features of online sports betting and associated marketing strategies influence sports betting behaviour, as well as to examine which risk factors are likely to play a key role in increasing risk for sports bettors experiencing gambling-related harm. This will allow for policy and regulatory requirements to be formulated to ensure that they are effective in preventing any harmful or potentially harmful consumption of these products.

The overarching objective of this thesis was to elucidate reasons why online sports bettors may be categorised as problem gamblers and to use these findings to contribute to the development

of more effective prevention, harm minimisation, and treatment strategies. More specifically, the aim of the research presented in this thesis was to contribute to the understanding of online sports betting, particularly in terms of the implications of in-play sports betting, the impact of sports betting advertising, individual motivations for online sports betting, as well as an overview of the demographic characteristics of sports bettors. The thesis addressed these aims by using a mixed methods approach, incorporating a comprehensive scoping study, a content analysis of gambling marketing on *Twitter,* in-depth interviews with online sports bettors, and an online survey attracting international participants. This chapter will draw together the key findings and their implications for understanding online sports betting behaviour.

While an association between in-play sports betting and maladaptive gambling behaviour already exists (for a review, see Killick & Griffiths, 2019), the original contribution to knowledge within this thesis is in attempting to synthesise the knowledge and contribute to the understanding of online sports betting, as well as elucidate some of the potential reasons why in-play betting may be a particularly harmful form of gambling. This thesis demonstrates a clear association between in-play sports betting and problem gambling. To the author's knowledge, in-play sports betting has not previously been systematically reviewed. In addition, to the best of the author's knowledge, this is the first study to use an international sample of sports bettors to provide empirical evidence supporting the relationship between in-play sports betting, 'cash out', and problem gambling severity. While latent class analysis (LCA) has been previously used in gambling research to differentiate specific groups of gamblers, the author believes this to be the first study to consider whether sports bettors can be distinguished based on whether they utilise specific modes of access and, moreover, whether gambling is more problematic for some of these groups than others. Finally, to the author's knowledge, this thesis represents the first empirical assessment to use items from an adapted version of the British Gambling Prevalence Survey (BGPS; Wardle et al., 2011b) with a sample of international sports bettors.

11.2 Major Findings

The first empirical study in Chapter 5 was conducted to examine in-play sports betting by (i) systematically reviewing both the academic and non-academic 'grey literature', and (ii) empirically examining online sports betting websites to quantify the prevalence of in-play betting features. A total of 16 academic papers and two 'grey literature' reports were identified in the systematic review. Furthermore, of the 338 gambling websites visited, one-quarter were

found to offer at least one in-play betting feature. Several empirical and theoretical papers were identified addressing this research question, and the review provided an overall consensus that this form of sports betting has the potential to be more harmful than other forms of gambling (e.g., gambling on fixed odds) because of the inherent structural characteristics. Empirical research using behavioural tracking data (from the *bwin* dataset) indicated that in-play betting appears to be an important marker for gambling-related problems (LaBrie et al., 2007; LaPlante et al., 2008; Nelson et al., 2008). These studies identified a sub-group of gamblers who maintained a high involvement (e.g., number of bets and the total amount wagered) in online gambling via in-play betting (LaBrie et al., 2007; LaPlante et al., 2008). However, the review also identified that the overall evidence base for the relationship between problem gambling and in-play sports betting was limited, and relied on behavioural tracking and cross-sectional research. Further findings stemming from the review indicated that there had only been one study that had empirically explored online sports betting behaviours in the context of specific in-play betting features such as 'cash out' (i.e., Lopez-Gonzalez et al., 2019a) and no studies, at the time of writing, had qualitatively examined in-play sports betting.

The second empirical study presented in Chapter 6 examined: (i) how gambling operators promote their products on Twitter; (ii) how Twitter features are used by gambling operators, such as the use of hashtags; (iii) how gambling operators interact with their followers; and (iv) the implications that the findings may have on the regulation of sports betting advertising via Twitter. A snapshot content analysis was conducted using data collected from the Twitter accounts of ten of the largest sports betting operators in the UK during the opening weekend of the 2018-2019 English Premier League. In total, 3,375 tweets were collected and analysed using both deductive and inductive coding. The results indicated that Twitter serves as a platform where gambling operators can market their products in a normalised and positive way. For example, multiple strategies, including hashtags, were used to link gambling operator tweets with major sporting events. The inclusion of such hashtags suggests that those under the age of 18 years who are searching Twitter for content on a topic not related to gambling (e.g., a football event), may be exposed to gambling promotions and as a result, could be encouraged to visit gambling websites. In addition, the posting of online sports betting content alongside sports news and events may contribute to the normalisation of gambling in a broader social context. Marketing inducements were frequently posted and those that appeared most often were enhanced odds, in-play sports betting odds, and customised odds requests. Lastly, the findings also highlight that over 90% of the tweets contained no responsible gambling

information. In summary, the main contribution of this chapter is the establishment of the key marketing strategies used by sports betting operators on Twitter.

The third empirical study presented in Chapter 7 was a qualitative interview study that explored participants' opinions and attitudes towards (i) sports betting advertising, and (ii) sports betting marketing techniques used by gambling operators. Semi-structured interviews were conducted with 19 UK sports bettors aged between 21 and 32 years old. Thematic analysis was used to analyse the transcripts and this analysis identified three main themes: (i) "temptation to gamble", (ii) "promotion characteristics of gambling", and (iii) "regulating gambling advertising". Each theme consisted of two or three subthemes that illustrated the underlying factors that were perceived to be important aspects that contributed to the opinions and attitudes towards the advertising. The ubiquitous nature of sports betting advertising was reported and participants described how this advertising has now become unavoidable, and although it was found to be prevalent across multiple marketing platforms, it was particularly pervasive during live televised sports and on social media. The frequency, content, and timing of sports betting advertising were found to contribute to the normalisation of gambling. Moreover, findings indicated that specific inducements, particularly enhanced odds and "request-a-bet" promotions were perceived to increase feelings of control and reduce feelings of risk, in some cases resulting in sports bettors placing impulsive bets.

The fourth empirical study in Chapter 8 explored participants' opinions and attitudes towards: (i) in-play sports betting, and (ii) the 'cash out' feature use within online sports betting. Analysis of the transcripts identified four broad themes: (i) accessibility of betting via a smartphone, (ii) in-play betting motivating factors to participate, (iii) in-play vs. pre-match betting engagement, and (iv) beliefs and attitudes towards the 'cash out' feature. The study highlighted that the prominent motivation for engaging in this gambling activity was financial; in-play sports betting was viewed as an activity whereby skill could be used to win money, more so over pre-match betting. Because sports bettors believed that skill could be used to influence the outcome of their in-play wagers, this form of betting provided them with a greater perceived level of control. The majority of sports bettors indicated that they had transitioned from gambling at high street betting shops to placing online bets for several reasons, including welcome offers and inducements offered by online gambling operators, and the ease and flexibility that mobile betting provided. Overall, sports bettors in this chapter viewed in-play sports betting favourably and readily accessible. However, the findings demonstrated that this

is a way of gambling that can be played without interruption and which may lead to repetitive (i.e., continuous) gambling and/or unwarranted feelings of control. The main contribution of this study was to explore in-play betting in greater depth and detail, in order for the findings to be further tested in the quantitative survey (Chapters 9 and 10).

Study five in Chapter 9 examined: (i) the relationship between socio-demographic characteristics and problematic gambling among sports bettors, (ii) the relationship between the type of platform used to place sports bets and problematic gambling among sports bettors, (iii) how motivations for sports betting vary among different population sub-groups, and (iv) the relationship between motivations for sports betting and problem gambling. The findings from this study highlighted that problem sports bettors were more likely to be younger in age and working full-time. A principal component analysis, using findings from the adapted BGPS (Wardle et al., 2011b), identified five factors relating to motivations for sports betting: winning, social, affect regulation, pleasure and mastery. Problem gamblers were significantly more likely to endorse sports betting for winning, social, affect regulation, and mastery reasons than at-risk and non-problem gamblers. The LCA that was conducted to assess modes of accessing sports betting identified the following five gambling classes: online sports bettors, mixed mode online sports bettors, mixed mode offline sports bettors, mixed mode sports bettors, and other. The online sports bettors' subgroup was the largest, and consisted of just under one third of participants (32.5%). This subgroup was the most likely to consist of non-problem gamblers. Categorisation into two of the other subgroups: mixed-mode offline sports bettors (those who placed bets over the telephone, at high-street bookmakers, and at venues), and mixed mode sports bettors (those who placed bets using online bookmakers and in-person) were the groups most likely to contain individuals categorised as problem gamblers. These results suggest that participating exclusively in online sports betting is not inherently associated with problem gambling.

The final study presented in Chapter 10 empirically examined which factors might predict problem gambling among sports bettors. More specifically, this study examined the relationship between problem gambling and salient risk factors for online sports betting that have been identified through the qualitative interview chapters. These were: sports betting advertising, advertising exposure, sports betting promotion uptake, newer features of online sports betting (in-play betting and 'cash out'), methods of sports betting, sports betting motivations, and trait impulsivity. The overall goal was to distinguish which risk factors are

likely to play a key role in increasing risk for sports bettors experiencing gambling-related harm. The results indicated that all of these factors were positively associated with problem gambling. However, after a multiple regression was conducted in order to determine the relative importance of the aforementioned predictors, only sports betting advertising involvement, in-play betting, 'cash out' use, betting on a laptop, betting at work, 'mixed mode gambling', motor impulsivity, and specific sports betting motivations (affect regulation and pleasure) significantly predicted problem gambling. Overall, these findings highlight the importance and need for further research that examines the structural and situational characteristics of online sports betting, while considering the individual characteristics of the gambler.

11.3 Summary of major findings

The studies in this thesis identified several key findings related to the marketing and advertising of sports betting products. Firstly, those categorised as problem gamblers reported stronger impacts of gambling advertising on their gambling involvement. Moreover, both problem gamblers and moderate-risk gamblers reported significantly higher exposure to sports betting advertising via numerous marketing channels, except for television advertising and internet pop-up advertising, where there was no difference in self-reported exposure between different gambling risk groups. Secondly, the most commonly marketed inducements by sports betting operators on Twitter included customised sports bets (CSBs), enhanced or boosted odds, and in-play betting odds. This aligns with findings from the qualitative study (Chapter 7) that indicated that these specific inducements are particularly appealing to all sports bettors, while the quantitative analysis demonstrated that the uptake of these inducements was positively associated with problem gambling severity.

To date, little research has been conducted to assess the relative strength of the relationship between sports betting risk factors and problem gambling. The results of the studies in this thesis indicate that several risk factors are associated with problem gambling in sports bettors. Sports betting motivations and higher levels of motor impulsivity were found to significantly predict problem gambling in the regression model. In addition, 'mixed mode' sports betting, betting at work, using a laptop to bet, and using the 'cash out' feature were risk factors that provided the largest explanatory power for problem gambling in a sample of international sports bettors. Younger adults and those working full-time were found to be most at-risk of experiencing gambling problems. However, there was no significant difference between gender

and gambling-related harms. While concerns have been raised about the potential dangers of mobile sports betting, the survey study found that those who bet using a laptop were most at-risk of being a categorised as a problem gambler. Moreover, solely online sports betting was not associated with gambling problems, but rather those who bet using multiple gambling platforms were most at risk. These findings highlight the importance and need for further research that examines the structural and situational characteristics of online sports betting, while still considering the role of individual characteristics when designing preventative and treatment strategies to reduce or minimise problem gambling.

11.4 Methodology

The present thesis used a sequential mixed method approach to firstly explore online sports betting in-depth with new participants (in the qualitative interview studies), the findings of which were then expanded to a larger population (in the quantitative online survey study). In the first empirical study of this thesis, a scoping-study was conducted to collect data pertaining to in-play sports betting. The scoping study was subsequently used as secondary data to integrate with conceptual relationships emergent in the qualitative studies. The second empirical study was a content analysis of gambling operators marketing strategies on Twitter. The findings from this study were also used as secondary data to integrate with conceptual relationships emergent in the qualitative studies. The findings from these initial exploratory studies were then used to inform the design and instrument selection for the large-scale online survey.

The mixing of qualitative and quantitative methods can be considered a challenging endeavour. For example, Mingers (2001) outlined four types of problems concerning mixed method research: philosophical (the issue of paradigm incommensurability), cultural (the extent to which academic and organisational cultures militate against multimethod work), psychological (issues with researchers who are only comfortable with a particular type of method), and practical. However, he also argued that these are not insurmountable. Despite these challenges, an increasing number of researchers have highlighted the importance of integrating quantitative and qualitative methods. The overall goal of employing a mixed method research design is to expand the findings and strengthen a study's conclusions (Schoonenboom & Jonhson, 2017). The quality of the research is improved because combining quantitative and qualitative research can draw on their respective strengths and weaknesses. In addition, qualitative methods often result in greater depth than quantitative methods, while quantitative methods

will often obtain results with better generalizability than qualitative ones. Overall, fuller and richer information will be obtained from a mixed methods study (Schoonenboom & Jonhson, 2017).

The present thesis conducted interviews both face-to-face and via telephone, allowing for data to be collected from harder to reach groups (please see Chapter 4 for more information). COVID-19 restrictions resulted in an increase in in-person qualitative research being conducted on virtual platforms. Consequently, as virtual platforms have grown in popularity, (for example Zoom and Microsoft Teams) they are also viable data collection tools because of their data management features, security options, and relative ease of use (Archibald et al., 2019). They also provide other benefits that telephone interviews may not, such as more personal connections. For example, being able to view the other persons facial expressions and making eye contact. Data for the interview studies (Chapters 7 and 8) were collected prior to the COVID-19 pandemic, before this method of data collection had risen in popularity and will therefore be considered for future research.

This thesis attempted to gain a deeper understanding of sports betting and sports betting advertising by exploring sports bettors' behaviours and perceptions of this marketing, as well as its relationship with other previously identified risk factors. Furthermore, the scoping study, in addition to the first qualitative exploratory study, identified relevant variables and generated further insights for future studies. In fact, these two studies demonstrated that in-play betting appeared to be more prevalent amongst individuals categorised as problem gamblers, and therefore suggested the importance of including these variables in subsequent quantitative studies. Moreover, the first qualitative studies also showed perceptions and use of specific sports betting promotions, and the use of these promotions, particularly among problem gamblers, was confirmed during the online survey study. Finally, the qualitative studies indicated that sports betting on a smartphone may be particularly harmful due to the ease of accessibility and availability. However, the online survey study, reported conflicting results in that it was actually those gamblers who placed bets using multiple platforms, and gambled using laptops, who were most at risk of experiencing gambling-related harm.

11.5 Theoretical implications

As discussed in Chapter 1, gambling is a multifaceted behaviour that is influenced by multiple contextual factors that cannot be covered by any single theoretical perspective (Griffiths &

Delfabbro, 2001). Theoretical models that explain the aetiology of gambling are not mutually exclusive but share many common overlapping elements (Blaszczynski & Nower, 2007; Griffiths & Delfabbro, 2001). Abbott et al. (2004, p.96) argue, "no theoretical framework is sufficiently complex and inclusive to take account of the wide array of agent, environmental and host factors that contribute to problem development, maintenance and cessation". There may be some elements and processes that occur across all types of gambling. However, addressing all forms of gambling with one model may result in some factors that are relevant to specific forms of gambling being missed (Griffiths & Delfabbro, 2001).

More recently, progress in addressing the development and maintenance of gambling disorder has been approached through the adoption of integrative biopsychosocial models (e.g., Blaszczynski & Nower, 2002; Griffiths & Delfabbro, 2001; Sharpe, 2002) which suggest that gambling problems are a result of the interplay of a variety of factors that contribute to gambling disorder. Although it has been argued that when a biopsychosocial view is adopted, it allows for the examination of individual gambling in relation to its broader cultural and social context (Griffiths & Delfabbro, 2001), the models focus mostly on individual physiological and psychological characteristics, giving less attention to the socio-environmental circumstances surrounding the individual (Abbott et al., 2018) or how they are associated with psychological characteristics. Availability and structural characteristics are such socio-environmental factors that have been included in a biopsychosocial pathways model (Blaszczynski & Nower, 2002) but, as Thomas et al. (2010) argues, these factors remain ill-defined and poorly understood.

The rapid developments in online sports betting and its structural and situational characteristics have significantly transformed the nature of this gambling activity. As a result, it was important to undertake explorative research to initiate conceptualisations of newly emerging sports betting behaviours. As Parke (2008) argues, it cannot be assumed that the psychological and sociological explanations of gambling behaviour is exhaustive or complete. Moreover, the role of environmental factors in promoting problematic sports betting, including advertising and other industry strategies, is undertheorized and underexplored in the gambling literature. Therefore, it would not be theoretically sensitive to approach online sports betting research from the paradigm of the present comprehension of gambling behaviour. This would restrict the emergence of features or processes that are relevant to the newer features of online sports betting. As a result, this thesis does not commit to a particular theory or perspective, but instead,

it provides an overview of the factors that have been found to be significantly associated with problem gambling with no defined paths.

The findings that have emerged from this thesis indicate that problematic online sports betting is associated with various internal and external factors, indicating that a broad public health framework (Abbott et al., 2004; Korn & Shaffer, 1999; Shaffer & Kidman, 2004) is suitable for the assessment and prevention of problem gambling in sports bettors. The framework acts as both a conceptual model and a resource guide to aid understanding of a broad set of risk factors at multiple levels (Hilbrecht et al., 2020), views gambling behaviour and problems on a continuum, utilises well-recognised theoretical models and policy frameworks (Baxter et al., 2019), and provides a way to explore the multi-dimensional issues that affect gambling uptake. Importantly, this approach allows for researchers to place a greater emphasis on multiple contributing factors at the population level, including broader social and environmental factors, as well as individual factors such as gender and socio-economic status. (Abbott et al., 2004; Hilbrecht et al., 2020).

The traditional public health approach distinguishes between the agent (availability and exposure to gambling activities), host (individual attributes and experiences that increase susceptibility to the development of problem gambling) and environment (the wider physical, social, and cultural setting within which gambling occurs) (Abbott et al., 2004, 2018; Korn & Shaffer, 1999) as components that merge in complex ways to develop patterns of vulnerability. The findings will now be briefly discussed in relation to the host, the agent, and the environment.

11.5.1 The agent

Risk factors relating to the agent (gambling exposure) that were identified in the present thesis include the continuous nature of in-play sports betting, the availability and accessibility of sports betting products, the technological developments in online sports betting (e.g., in-play betting, ‘cash out’, and custom sports betting products), and the impact of exposure to sports betting advertising.

The types of games played influence the development of gambling problems and specific characteristics of gambling are more closely related with problem gambling. Those who engaged in in-play betting more frequently and used the ‘cash out’ feature were more likely to be categorised as problem gamblers. This supports the theoretical perspective that continuous

forms of gambling (that provide a high frequency of reinforcement and can be played rapidly) should be the most problematic.

The availability of sports betting has increased substantially in recent years and sports betting is now available through multiple types of venues (e.g., high-street bookmakers, sports stadiums) but can, and are often, accessed remotely through different device types (e.g., smartphones, laptops/computers, and tablet devices). This research highlighted that those who accessed sports betting utilising multiple modes of access (i.e., online and land-based) were more likely to be categorised as problem gamblers, and those who accessed sports betting solely online were more likely to be recreational gamblers. The increased convenience and access to sports betting products by multiple devices may combine with pre-existing risk factors and vulnerabilities and make it more difficult for sports bettors to control their impulses and urges, and increases the chance of them gambling to excess (Gainsbury et al., 2016c).

The sports betting industry has also introduced new technological features, such as in-play betting, 'cash out', and custom bet requests, which have increased the perceived control that sports bettors have over the outcome of their wagers. In addition, sports betting advertising is rapidly increasing and the findings in this thesis support previous research that has indicated that sports betting advertising can increase urges to gamble as well as normalising the gambling behaviour. Problem gamblers and at-risk gamblers reported both higher exposure to advertising, greater impacts, and a higher uptake of multiple types of sports betting promotion.

11.5.2 The host

The host refers to the individual characteristics of the gambler and experiences that may make them more or less likely to develop gambling problems. Most sports bettors gamble for recreation and leisure, with a few gambling in excess. An important motivation found to be predictive of problem gambling was betting in order to regulate emotions. Therefore, coping motivations appear to play a role in the development and maintenance of problem gambling, which is consistent with the gambling literature. This lends support to need-state theories which assume that people gamble in order to avoid unpleasant feelings (Blaszczynski & Nower, 2002; Griffiths & Delfabbro, 2001). Trait impulsivity was also found to be associated with problem gambling severity in sports bettors, a consistent finding within the gambling literature. This finding points to impulsivity playing a role in the development of problem gambling.

In addition to sports betting already being a skill-based form of gambling, newer features, such as in-play betting, 'cash out' and custom sports betting products have led sports bettors to believe that they have more control over the gambling outcome due to their skills and expertise in sports. Therefore, erroneous beliefs about sports betting may contribute to the development of gambling problems.

11.5.3 The environment

The environment, or the wider cultural, social, and physical setting within which gambling occurs, in addition to gambling exposure, have an impact on problem gambling (Abbott et al., 2004). Those working full-time were more likely to be categorised as problem gamblers, and those who were retired were more likely to be non-problem gamblers. Online sports betting offers newer opportunities for gambling in the workplace. Many employees have their own working area which allows them to gamble in solitary without arousing suspicion, which potentially has implications for both productivity and work efficiency.

Sports betting for social reasons was most one of the motivations most commonly endorsed by problem gamblers. The qualitative studies indicated that sports betting is often undertaken as an activity with friends, and sports betting for social reasons was identified as a prominent motivation across all gambling risk groups, however, friends could end up discouraging or encouraging gambling. Therefore, it is like that in the individuals' social networks play a key role in the development and maintenance of sports betting behaviours.

The findings from this thesis also indicate that the accessibility of online gambling has resulted in a transition, for many, from betting at high-street betting shops to online spaces, influencing uptake of this new form of gambling. However, those more likely to be experiencing gambling-related problems, the 'mixed mode' bettors, did not just transition to solely online gambling, and ended up betting both online and in the land-based establishment,

Due to the evolving structural and situational developments in online sports betting, it is important to identify and examine key processes that are associated with patterns of problematic online sports betting (Parke & Parke, 2019). By aligning the findings of this thesis with the traditional public health approach, a more comprehensive picture emerges of the trends in online sports betting behaviour. By outlining and identifying multiple individual, external and social behaviours that are potentially risk factors, future researchers can develop theoretical

propositions based on these findings, and use them to underpin protection, prevention and treatment programmes that are aimed at each of these levels.

11.6 Limitations

A number of limitations have emerged from the studies in this thesis. This section briefly highlights a number of those, in addition to those presented in each of the empirical chapters. Although these studies all make a useful contribution to the sports betting literature, they have inherent limitations in regard to the examination and the determination of sports betting risk factors for problem gambling.

The empirical chapters in this thesis were not pre-registered or provided study protocols (Chapters 5, 6, 7, 8, 9 and 10). According to the American Psychological Association (APA), there are several advantages of preregistering a study that include "(a) ensuring that research teams share a clear understanding of their research goals and processes, (b) separating the confirmatory aspects of the research from the exploratory aspects, (c) allowing for input from colleagues online prior to conducting the study, and (d) allowing journal editors to accept researchers' papers conditionally, regardless of the outcomes themselves" (American Psychological Association, n.d., p.1). In addition, published study protocols would have ensured greater transparency in the research process, reduced replication bias, and improved reproducibility. Unfortunately, due to time constraints neither were feasible for the current thesis and therefore were not included as part of the research process.

The findings relied on retrospective and cross-sectional data. More specifically, Chapter 9 and 10 were cross-sectional in nature and therefore offered insights about the associations between the assessed variables, not about causal relationships. Therefore, prospective longitudinal research is required to (i) improve understanding of the relationship between exposure to sports betting marketing and sports gambling behaviour and associated problems, (ii) examine whether there is a consistency of sports betting motivations within individuals over time, and improve understanding of key drivers of these changes, and (iii) track the acquisition and development of in-play sports betting behaviour over time.

While increasing attention is being given to online sports betting and the impact of sports betting advertising, there is a need for research that involves more diverse populations. The sports betting advertising literature review (Chapter 3) and the scoping study (Chapter 5)

identified that much of the research into sports betting harms has been conducted in Spain, Australia and the United States. While Chapter 6 and 7 offered in-depth qualitative insights into the perceived impact of sports betting marketing, in addition to motivations for in-play betting, the sample consisted of a limited number of individuals categorised as problem gamblers and the majority of participants were young males. Therefore, additional qualitative studies about the harms of both online sports betting advertising and newer online sports betting feature behaviours using both a female sample and/or a sample of vulnerable individuals should be a priority for future research.

Self-report measures were used to gather information regarding participants' subjective problem gambling status, motivation, advertising exposure, sports betting behaviour, impulsivity, and the impact of gambling advertising. A number of the measures required some degree of recall of past experiences, particularly the screening instruments used to assess problem gambling and exposure to gambling advertising. These measures were all subject to specific (and well-known) methodological biases, but one in particular was recall bias. Future research might examine these variables using additional means other than self-report (e.g., eye-tracking). Some gambling researchers have recently begun to use ecological monetary assessment (EMA) to track exposure to sports betting advertising (e.g., Browne et al., 2019; Hing et al., 2019; Russell et al., 2018). The sampling of participants' experiences of sports betting advertising in real time, in their natural environments, will help to aim of minimise recall bias and maximise ecological validity (Shiffman et al., 2008). This appears to be an important avenue for future research.

The empirical findings in Chapters 9 and 10 demonstrated that newer features of online sports betting (in-play sports betting and 'cash out') were positively associated with problem gambling in sports bettors. However, there were several important measurements that were not included in the present thesis. Firstly, information on the amount of money spent on sports betting and other gambling activities was not recorded. Research has indicated a dose-response-relationship suggesting the amount of money spent and gambling problems are positively correlated (Brosowski et al., 2015). It is important that future studies incorporate a spending threshold, as spending is typically a good indicator of gambling problems (Brosowski et al., 2015). Secondly, research has indicated that individuals experiencing problem gambling tend to participate in multiple forms of gambling (Binde et al., 2017; Mazar et al., 2020). As a result, it is difficult to separate the effects of sports gambling specifically (Russell et al., 2019a).

Therefore, at minimum, future studies should collect data on all gambling activities engaged in, in addition to sports betting. Finally, although the BIS-15 (Spinella, 2007) is a validated and reliable measure, it is a measure of trait impulsivity rather than a measure of impulsive sports betting. Therefore, future studies into impulsive sports betting would benefit from using a measure, such as that implemented by Hing et al. (2016a), who assessed the percentage of sports bets that were 'researched and planned in advance of the match', 'on impulse before the start of the match', and 'on impulse during the match'.

One important aspect of the research to note is that the data were collected during a highly unprecedented period of the COVID-19 pandemic. Periods of lockdown resulted in significant disruption to worldwide sporting events. For example, the English Premier League 2019/2020 season was postponed for approximately three months between March and June, 2020. Online survey data for the present thesis were collected between September and November, 2020. Although live sports had resumed by the time the online survey was distributed, several survey measures (e.g., sports betting behaviours, problem gambling status, and wagering inducement uptake) asked participants about their betting behaviour in the previous 12 months. Findings from studies conducted in both Poland and the UK reported that during lockdown most bettors reduced their sports betting or stopped altogether (Nosal & Lopez-Gonzalez, 2021; Wardle et al., 2021), and one of these studies indicated that men experiencing gambling problems were most likely to start a new gambling activity (Wardle et al., 2021). Therefore, lockdown may have resulted in changes in behaviour for sports bettors in this sample that would not have been captured in the survey.

11.7 Reflection on language

It is important to consider the language used when discussing gambling disorder, as specific descriptors can contribute to both self and public stigma, and this can impact the lives of those experiencing gambling-related harm (Blaszczynski et al., 2020). It is important to reflect on how these terminologies were used in this thesis and continue to be used in the wider gambling literature.

This thesis used terminologies such as 'gambling disorder', 'pathological gambler' or 'compulsive gambler' in accordance with the terminology used by the authors of the cited papers. This way, the paradigm the authors were working in was explicit. In future, it would

help to distinguish these descriptors by highlighting this using quotation marks as suggested by Blaszczynski et al., (2020).

As noted by Blaszczynski et al. (2020), in the gambling literature, 'problem gambling' is broadly used and has some specific definitions. One used frequently throughout this thesis is an individual's score on the Problem Gambling Severity Index (PGSI; Ferris & Wynne, 2001) which categorises them into a group with an explicit label (i.e., 'problem gambler', 'moderate risk' gambler etc.). In future, these categories should be introduced alongside more sensitive language, such as 'individuals classified as being at moderate risk for gambling problems' (Blaszczynski et al., 2020), to reduce the negative impact that such language can have on the individual who is being discussed. In addition, this thesis also used the term 'responsible gambling' throughout, which is a narrative that implies that the individual should be able to control their gambling. Such language can carry an implication of social shame and irresponsibility (Livingstone & Rintoul, 2021). Therefore, the author of this thesis will be more considerate of the language that used in future work to combat stigmatisation.

11.8 Future research

A number of avenues for future research have emerged from the studies in this thesis. As mentioned above, one of the major limitations of the quantitative study was the use of self-report measures. Some gambling researchers have recently begun to use ecological monetary assessment (EMA) to track exposure to sports betting advertising (e.g., Browne et al., 2019; Hing et al., 2019; Russell et al., 2018). The sampling of participants' experiences of sports betting advertising in real time, in their natural environments, will help to aim of minimise recall bias and maximise ecological validity (Shiffman et al., 2008). This appears to be an important avenue for future research.

While studies assessing the content and frequency of social media advertising is gaining prominence, there is a gap in the literature on research into the impact of social media advertising on sports betting behaviour. Future research could build on the findings from the content analysis study (Chapter 6) and examine particular creative strategies used by social media operators, for example, the use of humour, and how the use of such strategies influences the intentions and attitudes towards gambling from children and other vulnerable and susceptible groups. There is also a gap for additional research into the marketing of sports

betting on other social media platforms, such as Facebook, Snapchat and Instagram. Moreover, an additional area of research is to examine sports betting advertising that is nested within television content. For example, a recent study by Gabrielli et al. (2021) described alcohol brand depictions in television and evaluated the impact of such depiction on adolescent drinking outcomes and reported that higher exposure to brand appearances in television shows was associated with youth drinking. Therefore, it would be an important line of research to investigate the impact of gambling depiction in television and whether it is associated with sports betting behaviour.

The studies in this thesis identified that those who bet at work were more likely to be categorised as problem gamblers. However, the analysis did not identify what type of job these sports bettors had. Analysis of data originating from a Swedish population study indicated that there were significant differences between occupational groups in gambling participation and at-risk and problem gambling status. More specifically, those employed in blue collar jobs or jobs that entailed driving a vehicle on city streets or highways scored higher on measures of problem gambling severity (Binde & Romilde, 2020). Therefore, future research could elucidate whether problematic sports betting at work is associated with a specific type of employment. As Binde and Romilde (2020) argue, knowledge about which occupational groups are at-risk or problem gamblers is important for developing preventative initiatives in the workplace and for directing these at the types of employees and work environments where they are most needed (Binde & Romilde, 2020).

The qualitative interview study (Chapter 5) indicated that sports betting often took place in social settings, and was an activity often undertaken with friends. The findings in Chapter 9 indicated that individuals categorised as problem gamblers were significantly more likely to be motivated to sports bet for social reasons (such as with friends and family, or just to be sociable) than non-problem gamblers. Future research could therefore examine the relationship between sports betting for social reasons and problem gambling. As Gordon and Reith (2019) argue, there is a need for broadening of perspectives that include both individual and socio-cultural influences on problem gambling. This research could then be used to address socio-cultural and structural factors, including social norms, sports betting locations, marketing, and policy and regulation, of sports betting, and which can influence sports betting behaviours (Gordon & Reith, 2019).

11.8 Implications

The results that have emerged from the studies in this thesis can be used to assist with the development of online sports betting prevention and harm reduction intervention strategies. A recent review argued that there is a need for additional evidence of differences in motivations and characteristics between subgroups of sports betting problem gamblers (Hesketh et al., 2021). This additional information will help to effectively tailor public health initiatives and harm reduction interventions to address the specific needs of these populations (Hesketh et al., 2021). The thesis study findings indicate that sports bettors experiencing gambling-related problems were characterised by multiple correlated risk factors. Therefore, a multifaceted range of responsible gambling and prevention strategies are required in order to address these. Firstly, these findings can be used to guide the design and delivery of public education campaigns in the UK. As the thesis identified that sports bettors younger in age were at greater risk of experiencing gambling-related problems, the results support calls from researchers for policymakers to work with public health professionals to develop educational materials to inform and teach young adults about the potential harms of sports betting (Hing et al., 2016a; McGee et al., 2020). Gambling education materials were recently introduced as a compulsory element of the UK Department of Education's Personal, Social, Health and Economic (PSHE) curriculum to be taught in secondary schools from September 2020. The course seeks to address underage gambling, as well as educate teenagers on identifying risks across different gambling activities, including playing scratch-cards, the National Lottery, and slot machines (How to address gambling through PSHE education, n.d.). Those designing this educational material should ensure that future editions of the PSHE teacher handbook (*How to address gambling through PSHE education*, n.d.) consider the inclusion of information specifically addressing in-play sports betting, 'cash out' and the associated risks from this gambling activity. This will encourage an appreciation in gambling problems amongst young people when they reach the legal age for sports betting.

For adults, several sports betting specific responsible gambling media strategies have already been introduced in the UK. For example, the UK charity, GambleAware, launched a public health campaign ('Bet Regret') in 2019 that aimed to raise awareness of impulsive betting, encourage moderation, drive self-reflection, as well as help friends and partners to recognise the signs of problematic sports betting, in order reduce gambling harms (GambleAware, 2021). The latest round of this campaign aimed to build awareness and understanding of 'tap out', and promotes the benefits of 'tapping out' when chasing losses, bored, or betting on sports that the individual would not normally engage with or follow. The primary target of the campaign is

high-risk gamblers, more specifically, young men aged 16-34 years, who gamble two or more times per week, who bet online, and reside in specific regions of the UK that have been identified as having the highest concentration of individuals at greatest need (GambleAware, 2019).

While the 'Bet Regret' campaign appears to be targeted at sports bettors who are deemed most at-risk, the present thesis also highlighted that there was a significant minority of individuals categorised as problem gamblers that are women. Many responsible gambling campaigns, including the one discussed above, are directed at young men (e.g., 'bet regret' and 'bad betty'). In February 2021, GambleAware launched a National Gambling Treatment Service campaign targeting women aged 18-54 years. This was the first campaign targeted at women to promote support and treatment for gambling harms. Study findings in this thesis suggest it may be beneficial to introduce separate, tailored initiatives specifically designed to target young female sports bettors, which focus on the mood-regulation dimensions of sports betting. Ultimately, it is important that these strategies, policies and interventions are uniquely targeted to reach the correct demographic or subgroup of sports bettors.

In order to develop effective, targeted, responsible gambling strategies for adult sports bettors, there are several key additional features that should be included in the design and delivery of media campaigns, resulting from the findings in this thesis. Football was the most popular sport to bet on across all gambling groups, and football betting odds in particular were heavily marketed by gambling companies on Twitter at the beginning of the Premier League. Therefore, as suggested by Chataway et al. (2018), responsible gambling campaigns should address the high mental and physical availability of online sports betting at the start of football seasons. Results from this thesis also indicated that one of the biggest reasons for engaging in sports betting was to win money. Skilled gamblers (i.e., sports bettors and poker players) view themselves as unique gamblers due to the fact they can use their ability to improve their odds of winning (Gainsbury et al., 2018). Because those who play skilled-based games have a higher likelihood of developing illusions of control about their betting abilities, responsible gambling messages should encourage sports bettors to be aware of the element of chance in games (Gainsbury et al., 2018). More specifically, messages should include reminders about the consequences of overspending, and highlight that ultimately the odds are against them winning, and the house will always win (Gainsbury et al., 2018). Overall, future campaigns need to

highlight that sports betting should be viewed as a pastime, rather than income source, and encourage bettors to set betting limits when required.

This thesis provides clear evidence of a positive relationship between sports betting at work and problem gambling severity. When gambling becomes problematic, it can affect both the organisation and other work colleagues (Griffiths, 2009). Therefore, it is important to consider measures that are aimed at preventing and responding to gambling harm in the workplace. In the UK, over 85% of businesses have alcohol and drug work policies, but less than 5% have similar policies for gambling (HRnews, 2020). Consequently, it is important that businesses seek to develop gambling specific policies which include educating employee services about the potential problems of workplace gambling (Griffiths, 2009), as well as training on how to support employees who may be experiencing problems. In addition to managers being trained to deal with workers who seek help, previous research has demonstrated that colleagues are likely to notice if an individual is suffering from personal problems earlier than management, therefore, workplace policies should encourage workers to be aware of the signs of any problem and to respond appropriately (Binde, 2017). Targeting information at employees can aid in more individuals seeking treatment, before they lose all resources, including their jobs (Hawley et al., 2007).

Findings from studies in this thesis regarding the individual characteristics of sports bettors, particularly their motivations and trait impulsivity, provide some important practical implications for specific gambling treatment strategies. As Stewart et al. (2008) argue, subtyping on the basis of personality and underlying motivations for substance misuse has resulted in the design and implementation of effective motivation-matched treatments. Therefore, similar motivation-matched treatments could be developed for affect regulation gamblers identified in this thesis, which may help improve treatment outcomes for those with gambling disorder. As suggested by Parke et al. (2004), cognitive-behavioural treatments could be adapted to target such motivations when addressing the problematic gambling behaviour of clients. Cognitive-behavioural therapy (CBT) endeavours to challenge and change cognitive distortions and behaviours, improve emotional regulation, and develop individual coping strategies that target solving current problems (Beck, 2011). Therefore, those motivated to gamble to regulate their mood, or as a behavioural response, could examine their tendency to bet on sports when they are feeling bored, tense, or betting in order to relax, and to assess the role of such tendencies in the pattern of their sports betting behaviour.

Similarly, cognitive remediation (CR) interventions are another promising approach to gambling disorder management, and have been demonstrated to have efficacy for treating other addictive disorders (Anderson et al., 2021; Challet-Bouju et al., 2017). More specifically, goal management training (GMT), a structured form of cognitive remediation, which aims to strengthen executive (i.e. deliberative) control, may be an effective treatment for addressing impulsive choice in addiction (Anderson et al., 2021). Anderson et al. (2021) argue that GMT strategies are theoretically relevant for stopping motor responses. Participants of GMT are taught to stop and mindfully reflect on whether their attention is focused on a planned goal or if they are acting on autopilot (impulse). Therefore, as higher trait motor impulsivity was one of strongest predictors for problem gambling, this intervention approach may be suitable for helping problem sports bettors curb impulsive betting responses, particularly when in-play betting and using the 'cash out' feature.

Findings from this thesis suggest that regulatory strategies intending to de-normalise gambling as an inherent part of sports need to employ substantial limitations on the volume of advertising display within sports games, sports programmes, and within non-gambling environments including social media. The findings from the content analysis study (Chapter 6) support the argument that social media advertising presents further opportunities for marketing that go above and beyond the considerations of traditional regulations, such as encouraging the sharing of content that exposes children to gambling, immediate links to betting on a mobile phone, and a high volume of gambling advertisements that normalise the activity (Rossi et al., 2021). As Killick and Griffiths (2020a, p.339) argue, "the development of effective policy will need to consider restriction on the availability of gambling advertisements on this social media platform that is likely to be accessed by children".

In terms of television advertising and advertising during live sporting events, although the UK currently employs a voluntary whistle-to-whistle ban before the watershed on the advertising of gambling during sporting matches, it is counter-intuitive given the large amount of sponsorship of leagues and sports teams that are then display during these sporting events. The high volume of which has been previously noted by Bunn et al. (2019) and Deans et al. (2017a). Therefore, regulators could consider a blanket ban on gambling sponsorship.

The findings also suggest specific inducements, in particular, those that display betting odds (e.g., in-play odds, enhanced odd offers, and customised sports bets) increased gambling urges and were appealing to all gamblers, but even more so amongst at-risk and problem gamblers.

These inducements increased feelings of control, and reduced feelings of risk and encouraged gamblers to bet (sometimes impulsively) when they had not previously planned to. Therefore, regulation is needed to prohibit the marketing for these particularly influential types of sports betting inducements in the UK. Given that sports betting advertising involvement has been identified as a significant predictor of problem gambling in this thesis (Chapter 10), the other option is to ban gambling advertising and inducements completely. This is an approach that has already been adopted in countries such as Italy, Spain, and Lithuania, who have implemented a mandatory ban on both advertising and sport sponsorship, which took effect in 2019, 2020 and 2021, respectively. Moreover, Spain and Lithuania have also prohibited promotions, gifts, discounts and additional incentives (Fletcher, 2021).

In-play sports betting has become one of the most popular features of sports betting platforms and the findings in this thesis highlight that this form of sports betting, as well as the 'cash out' feature, requires action from regulators and policymakers in order to address gambling harms arising from this type of sports betting. The first option could be to prohibit online in-play betting. This has previously occurred in Australia, who, since the introduction of the Interactive Gambling Act (IGA) which came in 2001, made it illegal for bookmakers to advertising and offer games like casinos, online poker, and in-play betting. However, the ability to bet in-play (excluding horse racing bets) is permitted providing that these bets are placed over the telephone via a voice call.

The second option, as argued by Parke and Parke (2019), is to introduce breaks in play in order to reduce the continuous betting loops that in-play betting allows. The authors suggest that these breaks could be implemented via two paths: self-imposed breaks in play and operator-enforced breaks in play (Parke & Parke, 2019). The first option would require providing gamblers with a feature where they can set their own restricted 'betting windows', where they would not be able to place bets outside of this period (Parke & Parke, 2019). Or alternatively, allow bettors the option to restrict or 'block' these sports betting features, without having to self-exclude from sports betting altogether (Parke & Parke, 2019). The other option, operator implemented breaks in play, could involve removing the option for bettors to instantly deposit, and implement a time-delay of five minutes, which may increase the probability of the individual making more informed and less emotionally driven gambling decisions (Parke & Parke, 2019). Although, a study conducted by Auer et al. (2019) examined the effect of mandatory play breaks (i.e., forced session terminations) for video lottery terminal (VLT)

players and found that there was no significant effect of a forced one-minute termination after a one-hour play duration. The terminated sessions were followed by sessions with higher stakes and longer playing durations. Based on these findings, the authors argue that forced breaks could potentially create more intense gambling. Therefore, additional research would be required in order to determine the ideal session length and optimal length of the play break to facilitate responsible gambling (Auer et al., 2019).

11.9 Final remarks

Identifying the salient risk factors for online sports betting is important due to the recent and expected growth of this form of gambling. Although the majority of the adult population gambles responsibly, for the small minority who experience gambling-related problems it can cause harmful individual and public health consequences. The present thesis employed a mixed-methods design to examine newer online sports betting features, the impact of sports betting marketing, and the characteristics of problematic sports bettors. The thesis findings support previous assertations that newer features of online sports betting, including in-play sports betting and 'cash out', are potentially problematic forms of gambling that are appeal to problem gamblers due to their inherent structural characteristics. Similar to previous research, the impact of sports betting advertising was found to be higher for both moderate-risk and problem gamblers. Finally, sports betting solely online was not associated with gambling problems, and those who bet using multiple gambling platforms (i.e., 'mixed mode' gamblers) were most at risk of experiencing gambling-related problems. These findings emphasise the importance of considering not only the individual risk factors of the bettor, but their exposure to sports betting products and sports betting marketing, as well as the broad social and environmental factors in which sports betting occurs. The studies presented in this thesis have made an important contribution to the knowledge of online sports betting because they have highlighted some of the individual, structural, and situational characteristics that are most greatly associated with the likelihood of an individual experiencing gambling-related harm. As a result, the findings from this thesis can be used to inform targeted educational, preventative and therapeutic interventions.

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Appendix A

Declaration of Collaborative Work

Literature reviews

Killick, E. A., & Griffiths, M. D. (2019). In-play sports betting: A scoping study. *International Journal of Mental Health and Addiction*, *17*(6), 1456-1495. https://doi.org/10.1007/s11469-018-9896-6

Contribution of the first author (EA Killick) to each of the literature reviews:

- Initiation of review
- Development of key ideas
- Literature collection
- Literature organisation
- Literature analysis
- Write-up
- Implementation of co-authors' feedback

Empirical chapters:

Killick, E. A., & Griffiths, M. D. (2020). A content analysis of gambling operators' twitter accounts at the start of the English premier league football season. *Journal of Gambling Studies*, *36*(1), 319-341. https://doi.org/10.1007/s10899-019-09879-4

Contribution of first author (EA Killick):

- Initiation of research
- Development of key ideas
- Development of coding schedule
- Data collection
- Data analysis
- Write-up
- Implementation of co-authors' feedback

Killick, E. A., & Griffiths, M. D. (2020). A Thematic Analysis of Sports Bettors' Perceptions of Sports Betting Marketing Strategies in the UK. *International Journal of Mental Health and Addiction*. Advance online publication. https://doi.org/10.1007/s11469-020-00405-x

Killick, E. A., & Griffiths, M. D. (2021). Why do individuals engage in in-play sports betting? A qualitative interview study. *Journal of Gambling Studies, 37*(1), 221-240. https://doi.org/10.1007/s10899-020-09968-9

Contribution of first author (EA Killick):

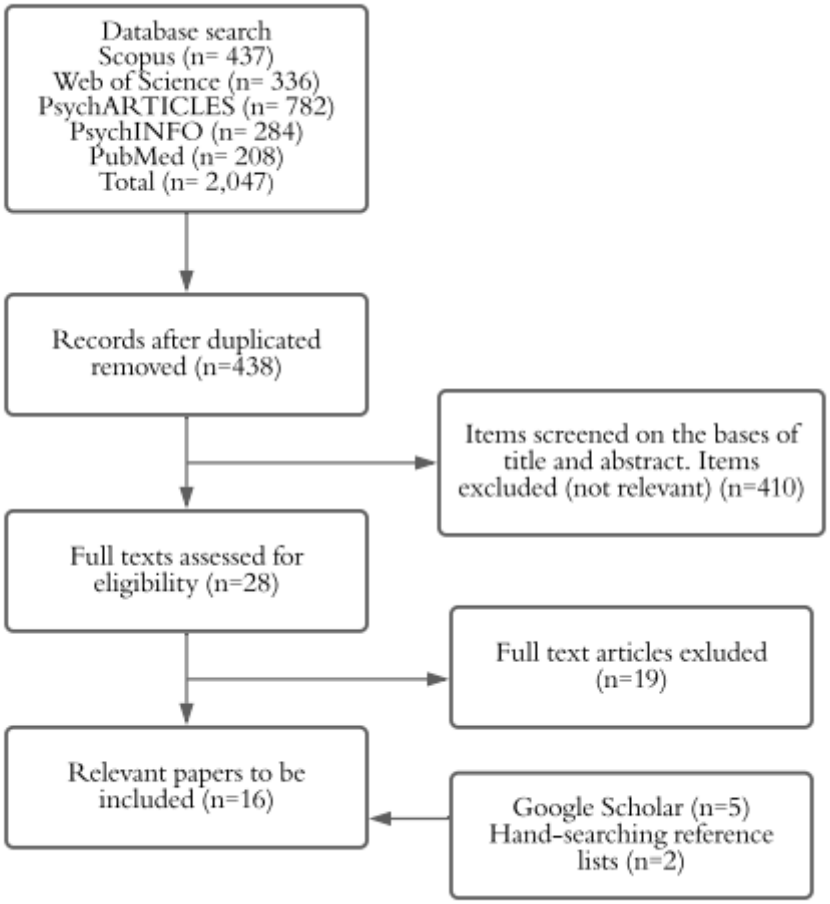
- Initiation of research
- Development of key ideas
- Development of interview schedule
- Participant recruitment
- Data collection
- Data analysis
- Write-up
- Implementation of co-authors' feedback

Declaration of Co-Author Contribution:

The content of the chapters presented in the thesis reflect the original and independent work completed by the first author (E A. Killick). Input from the additional co-author was provided in the form of general feedback / guidance and manuscript edits in line with the normal working expectations of a PhD Student – Supervisor relationship. No original content in the thesis or accompanying journal articles was produced by any co-authors listed

Appendix B

The flow diagram of the database literature search presented in Chapter 5



Appendix C

A table summary of online findings from online gambling websites

Provider	Website	In-play product	Type	Device type	Bet Type	Type of sport	Available markets	Information retrieved from	Date accessed	Further observations
10bet	www.10bet.com	Cash Out	Full, partial	Desktop and mobile	Single and accumulator	Does not state	Does not state	The promotions tab on the site: https://www.10bet.co.uk/promotions/sports/cash-out-your-bet/	28/11/2017	
138 Sportsbook	www.138.com	Cash Out	Full, partial	Desktop and mobile	Single and accumulator	Does not state	Does not state	The Cash Out tab on the top of the site: https://global.138.com/en-gb/cashout	28/11/2017	
1x2Masters	www.1x2masters.com	Cash Out	Full	Desktop and mobile	Single and accumulator	Football, Tennis, Basketball, Horse Racing, Cricket and more	Does not state	Terms and conditions tab and then Cash Out	28/11/2017	
32Red Sport	www.32red.com/sport	Cash Out	Full	Does not state	Does not state	Does not state	Does not state	https://www.32red.com/sport/promotions/cash-in-your-bets-at-32red	28/11/2017	It is referred to as 'Cash In' rather than 'Cash Out'
377Bet	www.377bet.com	Cash Out	Full	Does not state	Single and accumulator	Does not state	Does not state	http://www.377bet.com/information/terms-and-conditions/	30/11/2017	
888 Sport	www.888sport.com	Cash Out	Full and partial	Desktop and mobile	Single and accumulator	Does not state	Does not state	https://www.888sport.com/getting-started/betting-rules/	30/11/2017	
Adjarabet Sports Betting	bookmakers.adjarabet.com	Cash Out	Full		Single and accumulator	Football, tennis, basketball, baseball, volleyball, ice hockey, handball, American football, rugby, snooker, Futsal, beach volleyball, badminton and table tennis.	**Football**: Match result, both teams to score, handicaps, number of goals. **Tennis**: Match result, total number of games **Basketball**: Match result, total number of points **Baseball**: Match result, total number of points **Volleyball:** Match result, total number of points **Ice hockey**: Match result, total number of goals, both teams to score **Handball:** Match result, total number of goals **American Football**: Match result, total number of points **Rugby:** Match result, total number of points **Snooker:** Match result, total number of	https://www.adjarabet.am/en/pages/show/CashOut	30/11/2017	

							frames **Beach volleyball:** Match result **Badminton:** Match result **Table tennis:** Match result			
AllPro	www.allpro.eu	Cash Out	Full	Desktop and mobile	Single and accumulator	Does not state		https://app.allpro.ag/info/cashout	30/11/2017	
Bet MIRA	www.betmira.com	Cash Out	Full	Desktop and mobile	Does not state	Does not state	Does not state	https://www.betmira.com/how-to-start/cash-out.html	30/11/2017	
Bet-at-home	www.bet-at-home.com	Cash Out	Full	Desktop and mobile	Single and accumulator	Does not state	Does not state	https://uk.bet-at-home.com/en/terms#8	30/11/2017	
Bet11888	www.bet11888.com	Cash Out	Full	Desktop	Does not state	Does not state	Does not state	http://www.bet11888.com/en-gb/termsandconditions.aspx	30/11/2017	
Bet3000	www.bet3000.com	Cash Out	Full, partial	Desktop and mobile	Does not state	Does not state	Does not state	https://www.bet3000.com/en/s/agb (downloaded terms and conditions)	30/11/2017	
Bet365	www.bet365.com	Cash Out and Edit My Bet	Full, partial, auto	Desktop and mobile	Single and accumulator	A variety of sports including Soccer, Tennis, Horse Racing, Cricket and Basketball	Does not state	https://extra.bet365.com/features/cash-out	30/11/2017	The maximum number of times a bet can be partially Cashed Out is 10 times for single bets and five times for eligible multiples
Bet777	www.bet777.be	Cash Out	Full, partial	Desktop	Single and accumulator	Does not state	Does not state	https://www.bet777.be/cashout/?langid=474	30/11/2017	
BetBoro	www.betboro.com	Cash Out	Full	Desktop and mobile	Single and accumulator	Does not state	Does not state	https://www.betboro.co.uk/#/promos/?news=137632	30/11/2017	
Betbright	www.betbright.com	Cash Out	Full	Desktop and mobile		Football, tennis, basketball, rugby union, rugby league, ice hockey, boxing, baseball, American football, darts and snooker	**Football**: Draw No Bet, Next Team to Score, To qualify, To Win The Trophy, Half-Time Result, Rest of First Half Result, Half-time Next Team To Score, Half-time Draw No Bet, Rest of Match Result, Extra Time Half-Time Result, Extra Time Next Team to Score, Extra Time Result, Result after 5,10,15,20,25,30,40,50,55,60,65,70,75,80 and/or 85 minutes, Team Not to Score, Team to Score, Score in Both Halves, Win Both Halves, Win Either Halves, To Win to Nil, Clean Sheet, Half-time First Team to Score, Half-time Result, Half-time Draw No Bet, 2nd Half Result, To Qualify, To Qualify For	https://www.betbrighthelp.com/?s=cash+out	30/11/2017	

							Semi Finals, To Win in Extra Time, To Win On Penalties, To Qualify for Final, To Lift The Trophy. **Tennis:** Match Result, Competitor One First Service Game Winner, Match Point Winner Game Winner, Set Winner, Specific Set Winner, Second Set Winner, Lose 1st Set & Win Match, First Set Winner, Win 1st Set and Win Match, Doubles Win 1st Set **Basketball:** 1st Quarter Money Line, 2nd Quarter Money Line, 3rd Quarter Money Line, 4th Quarter Money Line, 1st Quarter Result 3-Way, 2nd Quarter Result 3-Way, 3rd Quarter Result 3-Way, 4th Quarter Result 3-Way **Rugby Union**: Match Winner 3-Way, Match Winner 2-Way, 2nd Half Winner **Rugby League**: Match Winner 3-Way, Match Winner 2-Way, 1st Half Winner Ice Hockey: Match Result (No Overtime), 1st Period Result, 2nd Period Result, 3rd Period Result **Boxing**: Fight Winner, Draw no Bet **Baseball**: Match winner **American Football**: Moneyline, Win match in Normal Time **Cricket**: Match Winner 2-Way, Match Winner 3-Way, Highest Opening Partnership **Darts:** Match Winner 2-Way, Match Winner 3-Way **Snooker:** Winner 2-Way		
BetClic	www.betclic.com	Cash Out	Full, partial	Desktop and mobile	Single and accumulator	Does not state	Does not state	https://en.betclic.com/cashout-agb-betclic-sport-cspo_bc_co_tc	30/11/2017
Betdaq	www.betdaq.com	Cash Out	Full	Desktop and mobile	Does not state	Does not state	Does not state	http://betdaqhelp.custhelp.com/app/answers/detail/a_id/649/kw/terms%20and%20conditions#PART_3_THE_BETDAQ_RULES	30/11/2017
BetEast	www.beteast.eu	Cash Out	Full, partial	Desktop and mobile	Does not state	Football, tennis, ice hockey, American football and 'many more'	Does not state	https://www.beteast.co.uk/en-gb/help/faq	30/11/2017
Betfair	www.betfair.com	Cash Out	Full	Desktop and mobile	Single and accumulator	Football, tennis, horse racing , golf and basketball	Win and Each-Way Horse Racing single and multiples bets	https://www.betfair.com/sport/cashout	30/11/2017

Betfinal	www.betfinal.com	Cash Out	Full, partial	Desktop and mobile	Does not state	Does not state	Does not state	https://www.betfinal.com/live-betting/	30/11/2017	
BetFirst	https://betfirst.dhnet.be	Cash Out	Full, partial	Desktop and mobile	Single and accumulator	Football, basketball, tennis and ice hockey	Does not state	https://betfirst.dhnet.be/promotions/cashout/	30/11/2017	
Betfred	www.betfred.com	Cash Out	Full	Desktop and mobile	Single and accumulator	football, horse racing, tennis and golf markets	Does not state	http://www.betfred.com/sport/promotions/cashout/cashout-explained	30/11/2017	You can only cash out a horse racing bet as part of an accumulator
Bethard	www.bethard.com	Cash Out	Full	Desktop and mobile	Single	Does not state	Does not state	https://www.bethard.com/promotions/cashout	30/11/2017	"
BetMcLean	www.betmclean.com	Cash Out	Full	Desktop and mobile	Does not state	Does not state	Does not state	https://www.betmclean.com/UK/1304/help#action=rulebook&page=rulebook&psection=help	01/12/2017	
BetOlay	betolay1.com	Cash Out	Full	Desktop and mobile	Single and accumulator	Does not state	Does not state	http://www.betolay10.com/information/betting_rules/bahis-sat_en/	01/12/2017	
BetRebels	https://www.betrebels.gr/sports	Cash Out	Full	Desktop and mobile	Does not state	Does not state	Does not state	https://www.betrebels.com/live-betting	01/12/2017	
Betsafe	www.betsafe.com	Cash Out	Full	Desktop and mobile	Single and accumulator	Football	Only the following bet groups: Match Winner (1X2), Full time totals (Over/Under), Half time totals (Over/Under), Halftime result (1X2), Half time/Full time, Correct score.	https://www.betsafe.com/en/odds/help-and-support/rules#Anchor3	01/12/2017	The website also confirmed which football leagues were most commonly available for cash out.
Betser	www.betser.com/en	Cash Out	Full, partial	Desktop and mobile	Single and accumulator	Does not state	Does not state	https://www.betser.com/en/faq	01/12/2017	
Betsonic	www.betsonic.com	Cash Out	Full	Desktop	Does not state	Does not state	Does not state	https://www.betsonic.com/en/terms-conditions	01/12/2017	
Betsson	www.betsson.com	Cash Out	Full	Desktop and mobile	Single	Football	Match winner	https://support.betsson.com/ena	01/12/2017	
BetStars	www.betstars.com	Cash Out	Full	Desktop and mobile	Single and accumulator	Does not state	Does not state	https://www.betstars.uk/faq/	01/12/2017	
BetVictor	www.betvictor.com	Cash Out	Full, partial	Desktop and mobile	Single and accumulator	Footbal, horse racing, tennis and basketball	**Football**: Match Betting – 90 mins, 1st Half & 2nd Half, Total Goals – Over/Under, Both Teams To Score – 90 mins, 1st Half & 2nd Half, Match Result & Both Teams To Score, Correct Score – 90 mins, Half Time, Extra Time, To Win Extra Time & Penalty Shootout, Asian Handicaps, Asian Goal Lines, 3-Way Handicap, Double Chance,	https://www.betvictor.com/en-gb/sports/cash-out	01/12/2017	

							Team Total Goals, 1st Team To Score **Tennis:** Match Betting, Set Winner Set Betting (Match), **Basketball:** Handicap, Total Points, Money Line **Horse Racing**: Outright Win (not including SP bets & Antepost markets), Outright Each Way (not including SP bets & Antepost markets)			
Betway	www.betway.com	Cash Out	Full, partial	Desktop and mobile	Single and accumulator	Does not state	Does not state	https://sports.betway.com/en/sports/dyn/CashOut	01/12/2017	Only horse racing multiples can be cashed out
BGbet	www.bgbet.com	Cash Out	Full	Mobile (from iTunes app store only)	Does not state	Does not state	Does not state	https://appadvice.com/app/bgbet-bet-tracker/1267382583	01/12/2017	
Black Type	www.blacktype.bet	Cash Out	Full	Desktop and mobile	Single and accumulator	Does not state	Does not state	https://www.blacktype.bet/terms-and-conditions/	01/12/2017	
Boylesports	www.boylesports.com	Cash Out	Full	Desktop and mobile	Single and accumulator	Football, Tennis, GAA, Snooker, Darts, Rugby, Cricket, NFL, Baseball, Basketball and Ice Hockey.	Does not state	http://www.boylesports.com/cashout/faq/	01/12/2017	
Bruce Betting	www.brucebetting.com	Cash Out	Full	Desktop and mobile	Single and accumulator	Does not state	Does not state	https://www.brucebetting.com/terms-and-conditions/	01/12/2017	
Bwin	www.bwin.com	Cash Out	Full	Desktop and mobile	Single and accumulator	Does not state	Does not state	https://help.bwin.com/en/sports-help/mobile-sports-betting/early-payout-terms-conditions	01/12/2017	
Carbon Sports	www.carbonsports.ag	Cash Out	Full	Desktop	Does not state	Does not state	Does not state	https://www.carbongaming.ag/info/cashout	01/12/2017	
Colossus Bets	www.colossusbets.com	Cash Out	Full, partial	Desktop and mobile	Does not state	Does not state	Does not state	https://www.colossusbets.com/info/faq	01/12/2017	
ComeOn!	https://www.comeon.com	Cash out	Full	Desktop and mobile	Single and accumulator	does not state	Does not state	https://comeon.secure.force.com/chat?cid=84fa176c54d1da1aa071d8ba457cb0af&sid=1123238995265730 2304#/faq/Betting/ka00Y000000ZVKcQAO	01/12/2017	
Coral	www.coral.co.uk	Cash Out	Full, partial	Desktop, mobile and in-shop	Single and accumulator	Boxing, darts, football, tennis, rugby union 6 nations	**Football**: Match Result, Next Team to Score, Correct Score, Half-Time/ Full-Time, Both Teams to Score, Double Chance, First Half Result, First Half Correct Score, Second Half Result, Second Half Correct Score, First Half Double Chance, Second Half Double Chance, To Win and Both Teams to Score, Both Teams to Score in Both Halves, Both Teams to Score in First Half, Both Teams to Score in Second Half,	https://www.coralbettracker.co.uk/#/	01/12/2017	

							Number of Teams to Score, Score Goal in Both Halves, Score Goal in First Half, Score Goal in Second Half, Outright Markets*- Premier League, Championship, League 1, League 2 & National League, Outright Markets*- FA Cup & League Cup, Outright Markets* (Scottish)- Premiership, Championship, FA Cup & League Cup, Outright Markets*- Champions League, Europa League, La Liga, Serie A & Bundesliga. **Boxing**: Fight Betting, Method of Victory **Darts**: Match Betting **Rugby Union**: Outright Tournament Betting, Match Betting, 1st Half Betting **Snooker**: Match betting **Tennis:** Match Betting, Set Betting, Set Winner		
Crownbet	crownbet.com.au	Cash Out	Full	Desktop and mobile	Single and accumulator	Does not state	Does not state	https://crownbet.com.au/support/betting-info/cash-out	01/12/2017
Expekt	www.expekt.com	Cash Out	Full, partial	Desktop and mobile	Single and accumulator	Does not state	Does not state	https://en.expekt.com/cashout	01/12/2017
Fun88	www.fun88.co.uk	Cash Out	Full, partial	Desktop and mobile	Single and accumulator	Football, tennis, basketball, ice hockey, American football, baseball and "many other sports"	Does not state	https://www.fun88.co.uk/en-gb/info/cashout	05/12/2017
Gamebookers	www.gamebookers.com	Cash Out	Full	Desktop and mobile	Single and accumulator	Does not state	Does not state	https://sports.gamebookers.com/en/sports/p/promotions/6000/67/6705	05/12/2017
Genting Bet	www.gentingcasino.com/sports	Cash Out	Full	Desktop and mobile	single and accumulator	Football, horse racing and tennis	Does not state	https://sports.gentingcasino.com/promotions/cashout/	05/12/2017
Interapostas	www.interapostas.com	Cash Out	Full, partial	Desktop and mobile	single and accumulator	Football, tennis, ice hockey, basketball, volleyball, beach volleyball, handball, american football, baseball, futsal	Does not state	https://www.interwetten.com/en/common/cms/help.aspx?ln=HelpFAQ&tid=&cat=Help&st=General&snr=5	05/12/2017
JenningsBet	www.jenningsbet.com	Cash Out	Full, partial	Desktop and mobile	Single and accumulator	Football, tennis, basketball, ice hockey, American football, baseball and "many other sports"	Does not state	https://www.jenningsbet.com/en-gb/info/cashout	05/12/2017
Ladbrokes	www.ladbrokes.com	Cash Out, Edit my Acca	Full, partial	Desktop, mobile and in-store	Single and accumulator	Does not state	Bets placed in a retail store on the following markets then have the facility to be cashed out online: 5 Team Acca Money Back, Midweek & Weekend Quickslip, Wednesday & Thursday Quickslip, Top Prices Top Teams, Kammy's Sections (formerly known as Kammy's Easyslip), European Football	http://helpcentre.ladbrokes.com/app/answers/detail/a_id/594/~/cash-out-guide	05/12/2017

Leon Bets	www.leonbets.net	Cash Out	Full	Desktop and mobile	Single	Does not state	Does not state	https://www.leonbets.net/betting-rules#7	05/12/2017
LinesMaker	https://app.betlm.ag	Cash Out	Full	Desktop and mobile	Does not state	Does not state	Available on all applicable moneyline bets, and also on point spread and totals that show the same original line	https://app.betlm.ag/info/cashout	05/12/2017
LSbet	www.lsbet216.com	Cash Out	Full	Desktop and mobile	Single and accumulator	Football, tennis, basketball, baseball, handball, ice hockey, snooker, darts, volleyball	**Football:** Win/draw/win, Total goals under/over, Both teams to score, Double chance, Draw no bet, HT/FT, Handicap, 3 way handicap, Odd/even, Number of goals (bands). **Tennis:** Match winner, Set winner, Game winner, Total games, Game handicap. **Volleyball:** Match Winner, Set Winner. **Basketball:** Winner Markers **Baseball:** Winner Markets **Handball:** Win/Draw/Win Markets. **Snooker:** Winner Markets. **Darts:** Winner Markets. **Ice Hockey:** Win/Draw/Win Markets	https://www.lsbet216.com/en-GB/info/terms_and_conditions	05/12/2017
McBookie	www.mcbookie.com	Cash Out	Full	Desktop and mobile	Single and accumulator	Football, tennis and basketball	**Football**: Match Betting – 90 mins, Match Betting – 1st Half and 2nd Half, To Win Extra Time, To Win Penalty Shootout, Total Goals - Over/Under, Both Teams To Score – 90 mins, Both Teams To Score, 1st Half and 2nd Half, Match Result and Both Teams To Score, Correct Score – 90mins, Correct Score - Half Time and Correct Score - Extra Time, Asian Handicaps, Asian Goal Lines. **Tennis**: Match Betting, Set Winner, Set Betting. **Basketball**: Handicap, Total Points, Money Line.	https://cp.needinghelp.online/display/4/kb/article.aspx?aid=4137&n=1&docid=1916&tab=search	05/12/2017
Mobilebet	www.mobilebet.com	Cash Out	Full	Desktop and mobile	Single	Does not state	Excludes: Asian Handicap and Over/Under Points Spread and Over/Under Total Goals Bets	http://promotions.mobilebet.com/promo-uk/cash-out-now/	05/12/2017
Mr Green	www.mrgreen.com	Cash Out	Full	Desktop and mobile	Does not state	Does not state	Does not state	https://www.mrgreen.com/en/ufaqs/what-is-a-cash-out	05/12/2017
NaijaBet	www.naijabet.com	Cash Out	Full	Desktop	Does not state	Does not state	Does not state	https://www.naijabet.com/content/cash%20out	05/12/2017
NairaBet	www.nairabet.com	Cash Out	Full	Desktop and mobile	Single and accumulator	Does not state	Does not state	https://blog.nairabet.com/nairabet-cash-out-how-it-works/	05/12/2017
NairaStake	www.nairastake.com	Cash Out	Full	Desktop and mobile	Single	Does not state	Does not state	http://nairastake.com/index2.laz#tut_cashout	05/12/2017

NetBet	www.netbet.com	Cash Out	Full, partial	Desktop and mobile	Single and accumulator	Does not state	Does not state	https://sport.netbet.co.uk/cashout_promo/	05/12/2017	Cash Out for Horse Racing is available on single bets only.
NordicBet	www.nordicbet.com	Cash Out	Full	Desktop and mobile	Single	Football	Match Winner (1X2), Full time totals (Over/Under), Half time totals (Over/Under), Halftime result (1X2), Half time/Full time, Correct score.	https://support.nordicbet.com/en.html?faq=744	05/12/2017	
OddsRing	www.oddsring.com	Cash Out	Full	Desktop and mobile	Single	Does not state	Does not state	https://www.oddsring.com/betting-rules#7	05/12/2017	
Ohmbet	www.ohmbet.com	Cash Out	Full	Desktop and mobile	Does not state	Does not state	Does not state	https://www.ohmbet.com/#/popup/?u=&action=help&page=FAQ&sub=Popular	05/12/2017	
Paddy Power	www.paddypower.com	Cash Out	Full, partial	Desktop and mobile	Does not state	Does not state	Does not state	https://support.paddypower.com/app/answers/detail/p/6/a_id/1988/kw/cash%20out	05/12/2017	
PartyPoker Sports	sports.partypoker.com	Cash Out	Full	Desktop and mobile	Single and accumulator	Does not state	Does not state	https://help.partypoker.com/en/general-information/legal-matters/general-terms-and-conditions/Cash-out-tac	05/12/2017	
RealDealBet	www.realdealbet.com	Cash Out	Full, partial	Desktop and mobile	Single and accumulator	Does not state	Does not state	https://www.realdealbet.co.uk/offers/sports/cash-out-your-bet/#terms-and-conditions	05/12/2017	
Redbet	www.redbet.com	Cash Out	Full, partial	Desktop and mobile	Single and accumulator	Does not state	Does not state	http://www.streakgaming.com/forum/new-cash-out-feature-redbet-sportsbook-t68450.html	05/12/2017	
Roy Richie	https://www.royrichie.com/	Cash Out	Full, partial	Desktop and mobile	Single and accumulator	Does not state	Does not state	https://www.royrichie.com/information/cash-out/	05/12/2017	
Skybet	www.skybet.com	Cash Out	Full	Desktop and mobile	Single and accumulator	Football, horse racing, American football, tennis, darts	**Football:** Full Time Result, Both Teams To Score, Correct Score, Full Time Result and Both Teams To Score, Double Chance, Half Time Correct Score, Half Time Result, Half Time Under/Over x.5 Goals, Under/Over x.5 Goals, Soccer Saturday Half Time Price Boost, Soccer Saturday Price Boost, Soccer Saturday Trebles, Super Sunday Trebles, Champions League Trebles, Soccer Special Trebles, Super Sunday Price Boost, Soccer Special Price Boost, Champions League Price Boost, How Will The Tie Be Decided, Extra Time Match Result (excluding 90mins), Extra Time Correct Score (excluding 90mins), Extra Time Total Goals (excluding 90mins), Extra Time Half Time Result (excluding 90mins), Extra Time Half Time Correct Score (excluding 90mins), Extra Time Team To Score (excluding	https://support.skybet.com/app/answers/detail/a_id/399/~/my-bets-%26-cash-out	05/12/2017	

							90mins), Extra Time Number Of Teams To Score, Extra Time Under/Over x.5 Goals (excluding 90mins), Extra Time Half Time Under/Over x.5 Goals (excluding 90mins), Euro Enhanced Acca, Euro Enhanced Double. HorseRacing: Win & Each Way (excluding Antepost & SP bets), **Horse Racing** Price Boosts. **American Football**: Match Result. **Tennis**: Match Result. **Darts**: Match Result, Weekly Price Boost Special		
SLBet	www.slbet.com	Cash Out	Full	Desktop	Does not state	Does not state	1χ2, Double Chance, Under/Over, GG/NG, Half time correct score, Halftime/Fulltime, Odd/Even, GG/NG Halftime, Handicap, Halftime Double Chance, Second Half Result, 1st Half Total goals, 1st Half Total corners	https://www.slbet.com/help/?id=17	05/12/2017
Sportfanatik	www.sportfanatik.com	Cash Out	Full	Desktop	Does not state	Does not state	Moneyline bets, point spread and totals	https://www.sportfanatik.com/info/cashout	05/12/2017
Sporting Index	www.sportingindex.com	Cash Out	Full	Desktop and mobile	Single and accumulator	Football, rugby, tennis, cricket, horse racing, American football	Does not state	https://www.sportingindex.com> FAQ	05/12/2017
Sportingbet	www.sportingbet.com	Cash Out	Full, partial	Desktop and mobile	Single and accumulator	Football, Tennis, Basketball, Cricket, Rugby Union/League, Snooker, Darts, Ice Hockey, Handball, Baseball, American Football, NHL Hockey	Does not state	https://service.sportingbet.com/en/general-information/legal-matters/general-terms-and-conditions/Cash-out-tac https://britishbookmakers.co.uk/offers/sportingbet-cash-out-explained.htm	05/12/2017
Sportsbook.com	www.sportsbook.com	Cash Out	Full	Desktop and mobile	Single and accumulator	Does not state	Does not state	https://www.sportsbook.com/info/cashout	05/12/2017
Spreadex	www.spreadex.com	Cash Out	Full, partial, auto	Desktop and mobile	Single and accumulator	Does not state	Does not state	https://www.spreadex.com/sports/take-my-money-in-play/	05/12/2017
Stan James	www.stanjames.com	Cash Out	Full	Desktop and mobile	Single and accumulator	Does not state	Does not state	https://www.stanjames.com/UK/802/help#action=cashout&tab=cashout&subtab=cashout	05/12/2017
SuperLenny	www.superlenny.com	Cash Out	Full	Desktop and mobile	Single	Football	1X2 or over/under bet	https://superlenny.com/gb/tnc/sports	05/12/2017
Tipbet	www.tipbet.com	Cash Out	Full	Desktop and mobile	Single and accumulator	Does not state	Does not state	https://tipbet.com/en/content/tipbet-cash-out	05/12/2017
Titan Bet	https://www.titanbet.co.uk	Cash Out	Full	Desktop and mobile	Single and accumulator	Does not state	It is unavailable on the following markets: Cash out is currently unavailable on the following markets: Draw no bet	https://www.titanbet.co.uk/help/how-to-cash-out.html	05/12/2017

							(moneyline), 2-way full point handicap, 2-way Full point over/under, Double Chance (inc. HT), To Win To Nil, Clean Sheet, Favorite to win by, To Win not to nil, Win both Halves, Team to score in both halves, in Either Half, Win from Behind, Highest Scoring Quarter and Each-way bets. Any kind of each way betting is not eligible for Cash Out			
TLCBet	www.tlcbet.co.uk	Cash Out	Full, partial	Desktop and mobile	Single and accumulator	Football, basketball, ice hockey, American football, baseball, and 'many more'.	Does not state	https://www.tlcbet.co.uk/en-gb/info/cashout	05/12/2017	
Toals Bookmakers	www.toals.co.uk	Cash Out	Full	Desktop and mobile	Single and accumulator	Does not state	Does not state	https://www.toals.com/terms-and-conditions/	05/12/2017	
TonyBet	www.tonybet.com	Cash Out	Full	Desktop and mobile	Single	Does not state	Does not state	https://tonybet.com/betting-rules	05/12/2017	
uBet	www.ubet.com	Cash Out	Full, partial	Desktop and mobile	Single and accumulator	Does not state	Does not state	https://help.ubet.com/hc/en-us/articles/115001083283-What-is-Cash-Out-	05/12/2017	Cash Out is not available from any UBET, TAB or Tote retail outlet or via the phone
Unibet	www.unibet.com	Cash Out	Full	Desktop and mobile	Single and accumulator	Football and tennis	Football- outright winner and 'to be relegated', ouright winner and place	https://www.unibet.co.uk/help/products/sportsbook/live-betting and https://www.unibetcommunity.com/t5/Unibet-Idea-Exchange/Improvement-of-Unibet-s-Cash-Out-function/idi-p/44363	05/12/2017	
William Hill	www.williamhill.com	Cash Out	Full, partial	Desktop and mobile	All bet types	American Football, Baseball, Basketball, Cricket, Cycling, Darts, Football, Gaelic Football, Golf, Hurling, Ice Hockey, Motorbikes, Motor Racing, Pool, Rugby League, Rugby Union, Snooker and Tennis	Different competitions and markets are available to Cash Out depending on the sport in question. Please see this link for a full breakdown: https://williamhill-lang.custhelp.com/app/answers/detail/a_id/21849/kw/Outrightm	https://williamhill-lang.custhelp.com/app/answers/detail/a_id/8448	05/12/2017	Referred to as Cash In on the website
YouWin	www.youwin.com	Cash Out	Full	Desktop and mobile	Single and accumulator	Does not state	Does not state	https://www.youwin.com/t/info/rules_hsc.aspx	05/12/2017	
ZEturf	https://www.zebet.fr/en	Cash Out	Full	Does not state	Does not state	Does not state	Does not state	https://www.zebet.fr/en/cashout	05/12/2017	

Appendix D

Semi-Structured interview schedule for sports bettors

Introduction with conformation that the consent form has been read, understood and signed. Conformation that participant understands the purpose of the research and has had the opportunity to ask any questions.

Section 1: Gambling behaviour

- Can you tell me about when you first started gambling and why?
    - What type of gambling?
    - What medium?
    - Time spent/frequency?
    - Who with?
- What other gambling activities have you taken part in since? (lottery, scratchards, slots, poker)
    - What type
    - What medium/
    - When?
    - Time spent/frequency
    - Why?
- Tell me more about the first kind of online gambling you did? (e.g., computer, mobile phone, tablet or digital TV based)?
    - What type?
    - What medium?
    - When?
    - Time spent/frequency
    - Why?
- How have your gambling patterns changed since you first started gambling?
    - Prompt for time spent on online vs land based
    - Frequency, stake size, type, markets?
- What influenced these changes?
- What sports/individual markets do you like to bet on and why?

    - Type of sport?
    - Bet type?
    - Particular events? e.g. world cup/grand national etc.
- Who are you most likely to gamble with?
    - Friends/family/colleagues/alone?
        - Why?
- Where are you most likely to gamble?
    - Home, pub, work?
        - Why?

Section 2: Attitudes and opinions

- How do you feel about gambling online?
    - Good/bad/why?
- What are the reasons why you do online sports betting?
    - Likes/dislikes/why?
- Please can you tell me about the last time you placed an in-play sports bet?
    - Where/when/what on/why?
- What are the reasons why you do in-play sports betting?
    - Likes/dislikes/why?
- What features of in-play sports betting do you use and why?
    - Cash out?
    - Pro/cons of using this feature?
    - Motivations for using this feature?

Section 3: Advertising

- What are your opinions and experiences around the promotions used by online gambling operators?
- Please could you provide examples of sports betting adverts that you see?
    - Where/when/what are they advertising?
- What do you think about in-play gambling sports betting advertising specifically?
    - What are some examples of adverts?
    - Who are they aimed at?

    - Where do you see it the most?
- What effects, if any, does sports betting, and its promotion (on TV, etc.) have on you?

Section 4: Responsible Gambling

- Are you aware of responsible gambling features that address the impacts of sports betting/online betting?
    - Which ones are you aware of?
- Have you ever utilised an online responsible gambling feature?
    - Type (deposit limit/exclusion) ?
    - For how long ?
    - Why ?
- What other resources or strategies would you use if they were available?
- Is there anything further that you would like to add?

Appendix E

Thematic analysis codes (Chapter 7)

Temptation to gamble

Enticement

Advertising serves as a reminder to place a bet

Advertising causes you to think about placing a bet

Marketing and advertising makes placing a bet seem more tempting

It sucks you in

Advertising puts the idea into your head

Promotions make betting a bet appear attractive

Advertising highlights the available betting options and promotions

Shown during big sports events

Acts as a cue

Highlights offers and promotions

Unavoidable

You can't escape the advertisements

They're constantly shown whilst watching football on television

There's a large volume of advertising shown during the football match, including shirt sponsorship

Advertising is particularly prominent around popular sporting events/competitions

Advertising is all over social media (Twitter, YouTube, Facebook, Instagram)

Advertising pop-ups on the internet are irritating

Advertisements text messages often send promotions

Shown multiple times during one event

On the top of sports betting websites in yellow

Promotion characteristics of gambling

Attractive odds

Constant promotion of betting odds during live sporting events

Enhanced welcome odds are attractive

Boosted odds entice betting

Odds that appear good or better than usual are tempting

Often seen promoted during half-time television advertisements

Request-a-bet promotion provides control over betting choice

Request-a-bet promotions allow for more flexibility in selections

Feel like boosted odds are more likely to be winners

Often boosted odds are highlighted on bookmakers' websites over other promotions

Catch the eye more

Makes it easier to choose what to bet on when certain odds are promoted

Sways betting decisions

Doubt that the odds are in fact improved

Brand awareness

Celebrities used to advertise sports betting products

Certain companies use 'catchy' advertising slogans

Increases awareness of gambling products

Associated certain sports betting brands with their advertising strategies

Easier to recall certain brand messages e.g., 'in-play with Ray'

More trust in betting product if recognise the character used in the advertisement

Risky and humorous advertisements are more enjoyable to watch

The fun advertisements are the easiest to remember

Present gambling in a positive manner and minimise risk

Never show or talk about the negatives

Use characters to over-advertise the chance of winning

Normalisation of betting

Football is normally sponsored by a gambling company

It is expected that sport sponsorship will be followed by television advertisements for the gambling company

Intertwined with the sport

You don't get one without the other

Always when the football is on

They come hand-in-hand

The adverts are relaxed

Sports betting is displayed as light hearted

It's promoted as fun activity

An activity shared with friends

Adverts make betting more comfortable

Risks are minimised in the adverts

The two come hand-in-hand

Responsible gambling advertising

Responsible gambling messages

Warning are minimal

Displayed in a small window

Easy to miss

Positioned small, in the corner

Don't pay attention

Easy to ignore

Pointless as already betting

Timing of the message could be better i.e. at start not end of ad.

Contradictory to the message in the rest of the advertisement

Protecting children

Lots of children are exposed to sport sponsorship

Advertisements might tempt children to gamble

Advertisements might entice children to gamble when at the legal betting age

Responsible gambling strategies don't do enough to protect vulnerable individuals

Social media advertisements are intrusive and may appeal to children

Children are impressionable and advertisements may encourage gambling

Not enough is being done to prevent sports betting

Industry comparisons

Not enough is being done

Flaunted in your face

It should be banned completely

RG that is available in inefficient

Need to protect those with gambling problems

Should consider additional regulations like alcohol and tobacco

Take personal responsibility for gambling

Appendix F

Thematic analysis codes (Chapter 8)

Accessibility of betting via a smartphone

Transition from betting at a bookmaker's shop

Moved to online sports betting once it began to increase in popularity

Introduction of smartphones motivated the move across

Better promotions and offers online vs. at a bookmaker

Attraction to welcome offers when signing up online

Easy to browse the promotions

Price could change after you write down odds on slip at high-street bookmakers

Multiple online bookmakers available to sign up with

Cash out feature not available at high-street bookmakers

Ease in placing a bet

Convenience

Pressing buttons

Easy access to apps and websites

Not travelling time

Quicker to turn on phone that get out laptop

Associated odds app

Comparisons of odds

Comparisons of promotions

Easy to check prices on phone

Ability to place a bet anywhere

Not constrained to one location

Always accessible

Ability always check bet status

No relying other devices

Phone is always to hand

Flexible locations

Leave the home

Anonymous

Check in-running bets

Friend's house and the pub

Option to multi-task

Bet and watch

In-play betting motivating factors to participate

Increases excitement

Expectation of winning money

Fast paced

Increases interest

Increased enjoyment

More engaged

Buzz of the thought of winning

Prediction

Celebrate winning bets with friends

Compare bets with friends

Share tips

Imagine spending winnings

Makes the game more intense

More invested when watching it live

Tension and expectancy

More concerned about the outcome

Follow the bet whilst watching the game

More interesting for a non-fan

More excited if a bet is running

Physiological response to the chance of winning or losing

Allows gamblers to use their betting skills and knowledge

Making an educated guess

Judge how game is going

Cover yourself by betting on alternative angle

Be tactical with betting decisions

Watch how a game develops before placing a bet

Observe and react to the game play

Try to beat the bookies

Navigating the odds

Use your knowledge of the game

More confident in your betting skills when watching

Feeling like more of an expert betting in-play

Easier to predict what is going to happen next

Fast paced/level of skill involved to get 'good' odds

Follow prices

Wait for upsets

In-play vs. pre-match betting engagement

Bet in-play quickly- with emotion attached to it

Gut reaction/impulsive reaction to the state of the game

Rash decision when betting in-play

Rushed when placing in-play

Avoid surprise results betting in-play

Instant win when betting in-play

The ability place multiple bets in-play

Lost money and try to win it back betting in-play

Pre-match bet starts losing

Forgot to put a bet on before the match started

Observe and react to the changing odds

Only bet in-play if watching it

The odds can be better once the game has started

More time for a game to develop

Team is playing better than excepted

Capitalise if there is an upset in the game

Watch the game evolve first

Beliefs and attitudes towards the 'cash out' feature

Recouping a losing bet

'Risky' bet

Cash out for profit

Some money back is better than nothing

Accepted losing

Game almost complete

Anxiety over outcome

Being brave

Bet appears to be losing

More control over the outcome of the bet

Minimise losses

The 'cash out' monetary value being high

Above an acceptable value determined before the match

Ensure that stake is returned

Only cash out for a profit

Cash out and re-invest money

Stake returned

Less risk

Not a complete loss

More resources

Regret after cashing out

Taking a risk

Feeling disappointed

Frustrated

Disappointment in decision

Reacting to nerves

Subsequent regret

Distracted by watching event

Pros and cons of decision

Appendix G

List of Facebook groups and gambling websites where the survey was posted

Forums

http://www.afc-chat.co.uk/

http://www.letsbet.ie/forum

http://www.puntersmate.net/

https://forestfans.net/

https://forum.bestofthebets.co.uk/

https://matchedbettingblog.com/ https://www.bettingtalk.com/

https://thegamblingcommunity.com/

https://www.betangel.com/forum

https://www.bettorschat.com/

https://www.boards.ie/

https://www.thefootballnetwork.net/boards

Facebook pages

AFC Wimbledon

Ajax Fans

Aldershot Town Football Club Fans Group

All Notts Aren't We

Arsenal v Spurs football banter

Aston Villa the 12th Man

Barnet 'Til I Die

Barry Town United Supporters

Bayern Munich

Bilboa FC

Birmingham City Football Club From the Cradle To The Grave

Blackpool FC

Bohemian FC Fans

Bradford Bulls

Brighton and Hove Albion Forever

Bristol Rovers Fan Zone

Castleford Past and Present!

Castleford Tigers Banter

Celtic F.C To The Core

Charlton Athletic News and Views

Chesterfield FC Fans Group

Crystal Palace Supporters Red n Blue Army

Darts, Darts, Darts

Ebbsfleet United FC

England Football Supporters

Essex Grassroots Football Transfers

Everton FC: Home Of The Blues

Everton Supporters 2

Exeter City Supporters

Fans Villarreal CF

Football Groups for Adults

Football Index Trader Group

Football London - Tottenham hotspur fans

Forest Green Rovers #chat

Gold Chat- Derbyshire, Nottinghamshire, Leicestershire & Staffordshire

Halifax RLFC Group

Hampshire Premier Football League

Horse racing insider info

Horse racing tips/fancys

Kilmarnock chat uncensored

Leeds Rhinos Supporters Club London and Home Counties

Leeds United- Premier League 20/21

Leeds United With Respect

Leicester City Fans

Leicester City FC - The Memories group

Lincoln City Red Imps Banter

Liverpool F.C. News

Liverpool FC

Liverpool FC Fan page

London Broncos Away

Maidenhead United Fans

Man city Fan's

MK Dons Fans Page

MK Dons FC Fans Facebook Group

Morton vs St Mirren Banter

Motherwell fans

New Bohemians Football Club

Nottingham forest!! Fan Zone!!

Off The Pitch- Brentford FC

Oldham Athletic match day and team news.

Oxford United Loyal Supporters

Paris Saint Germain (P.S.G)

PL Fans Group

Premier League Banter Group (UK Only)

Real Betis Football Club

Reds v Blues Scouse Banter Group

Rugby League Buy Sell and Swap

Sarries Fans Forum

Scottish football banter without the old firms fans

Shrewsbury Town FC League 2020/2021

Soccer Updates

Southampton divisional football association

Stockport County Fans

Swansea City Supporters

Swindon Town Football Club

The British & Irish Lions 2021 - The Greatest Rugby Team on Earth! #TGRTOE

The Cricket Debate

The Football Banter Page

The Premier League- Leeds United

The Southampton Way

This is Halifax

Torquay United - YELLOW ARMY!!!

Tottenham Hotspur of Kettering

Tottenham till i die

TZ FC Bayern Munich

Valencia FC

Walsall Football Supporters' Trust

Wasps

Watford Football Club

Watford football club gossip page

We hate liverpool fc 4 ever

West Ham F.C Family

West Ham United Banter and news.

Wrexham Fans United

Wycombe Wanderers Football Club Friends

Appendix H

The online survey with a sample of international sports bettors

1. Have you placed at least one bet on sport in the last 12 months?

- ○ Yes
- ○ No

2. **Questions about you**

What is your gender?

- ○ Male
- ○ Female
- ○ Other

3. How old are you?

_____

4. What is your relationship status?

- ○ Single, that is, never married
- ○ Married and/or living with a partner
- ○ A civil partner in a legally-recognised Civil Partnership
- ○ Married and separated from husband/wife
- ○ Divorced
- ○ Widowed
- ○ Prefer not to say

5. What is your country of residence?

6. To which of these ethnic groups do you consider you belong?

- ○ White
- ○ Mixed: White and Black Caribbean, White and Black African, White and Asian, Any Other Mixed Background
- ○ Asian: Indian, Pakistani, Bangladeshi, Any other Asian Background
- ○ Black: Caribbean, African, Any other Black Background
- ○ Chinese
- ○ Prefer not to say
- ○ Any other ethnic group (please specify in the box below)

_____

7. Employment status

- ○ Full-time
- ○ Part-time
- ○ Not employed but looking for work
- ○ Retired
- ○ Student
- ○ Other (please specify in the box below)

_____

8. Which of these qualifications do you have? Tick all the qualifications that apply, or it not, specified, their nearest equivalent

- ○ O levels/CSEs/GCSEs (any grades)

○ GCSE grades A-C or ‘O’ Level pass or equivalent

○ A levels or AS levels or equivalent

○ SCE higher or equivalent

○ Degree level qualification or equivalent (include equivalent professional qualifications, such as chartered accountant)

○ Higher degree (e.g. MA, PhD, PGCE, post-graduate-certificate/ diplomas)

○ Professional Qualification below degree level (for example teaching or nursing qualification)

○ Other (please specify in the box below)

_____

9. How often do you place in-play bets?

○ Everyday/almost everyday

○ 4-5 days a week

○ 2-3 days a week

○ About once a week

○ 2-3 days a month

○ About once a month

○ 6-11 times a year

○ 1-5 times a year

○ Less frequently than once a year

10. **Gambling advertising**
Please select to what extent you agree with the following statements

	Strongly Agree	Agree	Disagree	Strongly disagree
I am more likely to gamble after seeing a gambling advertisement	○	○	○	○
Gambling advertisements do not influence my decision to gamble	○	○	○	○
Gambling advertisements increase my interest in gambling	○	○	○	○
Gambling advertisements make me think about gambling in the future	○	○	○	○
I don't pay attention to gambling advertisements	○	○	○	○
Gambling advertisements have increased my knowledge of gambling options	○	○	○	○
Gambling advertisement has increased my knowledge of gambling providers	○	○	○	○
I think more positively about gambling because of gambling advertisements	○	○	○	○
I play with higher risk (use more money) because of gambling advertisements	○	○	○	○

11. **About your personality**
Please select the answer that most applies to you

	Rarely/never	Occasionally	Often	Almost always
I act "on impulse"	○	○	○	○
I act on spur of the moment	○	○	○	○
I do things without thinking	○	○	○	○
I say things without thinking	○	○	○	○
I buy things on impulse	○	○	○	○
I plan for job security	○	○	○	○
I plan for the future	○	○	○	○
I save regularly	○	○	○	○
I plan tasks carefully	○	○	○	○
I am a careful thinker	○	○	○	○
I am restless at lectures or talks	○	○	○	○
I squirm at plays or lectures	○	○	○	○
I concentrate easily	○	○	○	○
I don't "pay attention"	○	○	○	○
I get easily bored when solving thought problems	○	○	○	○

12. How many online gambling accounts do you have?

- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5 or more

Features of online sports betting
Please select whether you agree with the following statements

13. Before placing a bet, I discuss it with somebody else

- ○ True
- ○ False

14. Before placing a bet, how often do you discuss it with somebody else

- ○ Sometimes
- ○ About half the time
- ○ Most of the time
- ○ Always

15. I use the "cash out" feature

- ○ True
- ○ False

16. How often do you use the "cash out" feature?

- ○ Sometimes
- ○ About half the time
- ○ Most of the time
- ○ Always

17. I enjoy watching a game more if I have bet on it

- ○ True
- ○ False

18. I enjoy watching a game more if I have bet on it

- ○ Sometimes
- ○ About half the time
- ○ Most of the time
- ○ Always

19. I bet on events during the game

- ○ True
- ○ False

20. I bet on events during the game

- ○ Sometimes
- ○ About half the time
- ○ Most of the time
- ○ Always

21. In the past 12 months, how did you bet on sports events?

- ☐ In person at a bookmakers
- ☐ In person at the venue
- ☐ On the phone to the bookmakers
- ☐ Online with a bookmaker
- ☐ Online with a betting exchange
- ☐ Somewhere else/another way

22. How much time do you spend on online sports betting?

- ○ Less than 1 hr per week
- ○ 1-3 hrs per week
- ○ More than 3hrs- less than 7hrs per week
- ○ More than one hour per day

23. How do you usually bet online?

- ○ Laptop/computer
- ○ Mobile phone
- ○ Tablet
- ○ Other (please specify) _____

24. Where are you usually when you place your **online** sports bets?

- ○ At a house (including your home)
- ○ At work
- ○ In a pub
- ○ Somewhere else (please specify) _____

25. Reasons for gambling

The questions that follow show reasons that some people have given about why they take part in some gambling activities.

For each one, please state whether these are reasons why **you** take part in sports betting

	Never	Sometimes	Often	Always

Because it's fun	○	○	○	○
For the chance of winning big money	○	○	○	○
Because it's something that I do with my friends or family	○	○	○	○
To be sociable	○	○	○	○
Because it's exciting	○	○	○	○
To make money	○	○	○	○
As a hobby or a past-time	○	○	○	○
Because of the sense of achievement when I win	○	○	○	○
To relax	○	○	○	○
To escape boredom or to fill my time	○	○	○	○
For the mental challenge or to learn about the game or activity	○	○	○	○
Because I'm worried about not winning if I don't play	○	○	○	○
To compete with others (e.g. bookmaker, other gamblers)	○	○	○	○
Because it helps when I'm feeling tense	○	○	○	○
To impress other people	○	○	○	○

26. How often have you bet on the following in the previous 12 months?

	Everyday/almost everyday	4-5 days a week	2-3 days a week	About once a week	2-3 days a month	About once a month	6-11 times per year	1-5 times a year	Not in the last 12 months
Football (soccer)	○	○	○	○	○	○	○	○	○
Horse racing	○	○	○	○	○	○	○	○	○
Rugby league	○	○	○	○	○	○	○	○	○
Rugby union	○	○	○	○	○	○	○	○	○
Golf	○	○	○	○	○	○	○	○	○
Tennis	○	○	○	○	○	○	○	○	○
Cricket	○	○	○	○	○	○	○	○	○
American football	○	○	○	○	○	○	○	○	○
Boxing	○	○	○	○	○	○	○	○	○
F1 racing	○	○	○	○	○	○	○	○	○
Other (please state below)	○	○	○	○	○	○	○	○	○

27. How often have you used one of the following sports betting promotions during the past 12 months?

	Everyday/almost everyday	4-5 days a week	2-3 days a week	About once a week	2-3 days a month	About once a month	6-11 times per year	1-5 times a year	Not in the last 12 months
Sign-up offer	○	○	○	○	○	○	○	○	○
Enhanced/boosted odds offer	○	○	○	○	○	○	○	○	○
In-play offer	○	○	○	○	○	○	○	○	○
Refer-a-friend offer	○	○	○	○	○	○	○	○	○
Mobile-betting offer	○	○	○	○	○	○	○	○	○
Refund/stake-back offer	○	○	○	○	○	○	○	○	○
Matched stake or deposit offer	○	○	○	○	○	○	○	○	○
Other	○	○	○	○	○	○	○	○	○

28. How often do you see sports betting products advertised in the following ways?

	Daily	Weekly	Monthly	Never
TV	○	○	○	○
Radio	○	○	○	○
Billboard/advertising hoarding	○	○	○	○
Newspaper	○	○	○	○
Magazine	○	○	○	○
Internet popup	○	○	○	○
Email	○	○	○	○
Text message	○	○	○	○
Highstreet bookmaker	○	○	○	○
Social media (Facebook, Twitter, YouTube and Instagram)	○	○	○	○
Other (please state)	○	○	○	○

29. **Gambling behaviour**

When you think of the **past 12 months**, how often...

	Never	Sometimes	Most of the time	Almost always
Have you bet more than you could afford to lose?	○	○	○	○
Have you needed to gamble with larger amounts to get the same feeling of excitement?	○	○	○	○
Have you gone back another day to try to win back the money you lost?	○	○	○	○
Have you borrowed money or sold anything to get money to gamble?	○	○	○	○
Have you felt you might have a problem with gambling?	○	○	○	○
Has gambling caused you any health problems, including stress or anxiety?	○	○	○	○
Have people criticized your betting or told you that you had a gambling problem, regardless of whether or not you thought it was true?	○	○	○	○
Has your gambling caused any financial problems for you or your household?	○	○	○	○
Have you felt guilty about the way you gamble or what happens when you gamble?	○	○	○	○

30. How has your gambling behaviour changed since Covid-19?

_____

_____

_____

_____

_____

Appendix I

Dummy variables used in the multiple regression model in Chapter 10

Gender[a]: 0= male, 1= female

Education[a]: 0= non-university degree education, 1= degree educated

Employment[a] (student): 0= working full-time, 1= student

Employment[a] (retired): 0= working full-time, 1= retired

Employment[a] (unemployed): 0= working full-time, 1= unemployed

Employment[a] (part-time): 0= working full-time, 1= part-time

Employment[a] (other): 0= working full-time, 1= other

Relationship[a] status (married): 0= single, 1= married/living with partner

Relationship[a] status (divorced): 0= single, 1=divorced

Device[a] (laptop): 0= mobile, 1= laptop

Device[a] (tablet): 0= mobile, 1= tablet

Location[a] (work): 0= home, 1= work

Location[a] (pub): 0= home, 1= pub

Platform[a] (phone and venue): 0= online bookmaker, 1= phone and venue

Platform[a] (venue and online): 0= online bookmaker, 1= in person and online

Platform[a] (other): 0= online bookmaker, 1= other

Platform[a] (betting exchange): 0= online bookmaker, 1= betting exchange