Group Cognitive Behavioural Therapy for Gambling Disorder:

A Case Series

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Abstract

Introduction: Treatments for gambling addiction are under-evidenced as there is limited high-quality research available. Some of the problematic issues within the treatment literature include: a lack of inclusion of individuals with gambling problems with complex co-morbidities; an emphasis on a statistical reduction in outcome measures, rather than identifying whether treatment results in abstinence and/or satisfaction from service users; a limited consideration of the mechanisms of change in therapy and; limited long-term data. This study aims to address these problems by evaluating a group cognitive behavioural therapy (CBT) intervention provided by the Northern Gambling Treatment Service in the UK, through use of single-case experimental method.

Aims: The research aimed to answer the questions: What does recovery look like for individuals with gambling problems? How effective is a group CBT programme in reducing problem gambling? What aspects of the programme are helpful or unhelpful for recovery and why is this?

Methods: Eight participants participated in a single case experimental design (SCED) which incorporated a baseline, treatment and follow-up phases. Standardised outcome measures assessed the impact of the intervention on gambling severity, wellbeing, gambling-related cognitions, self-efficacy and stigma. Regular 'target' measures assessed the impact on participants' goals for treatment, their gambling behaviour and urges. In order to identify key processes in the intervention, participants completed a group session rating scale during the group and a Change Interview at the end.

Results: Most participants demonstrated significant improvements in gambling severity, wellbeing and gambling-related cognitions. There was evidence of reduced gambling behaviour and urges following treatment. There was no evidence that the treatment improved perceived or experienced stigma. All participants' goals were to become abstinent. There were unexpected high levels of abstinence at baseline and the improvements in gambling severity and wellbeing occurred before starting the CBT group.

Conclusions: Treatment as a whole appears to be effective, particularly in regards to gambling severity and wellbeing, and there is evidently an important early impact before treatment. CBT appeared to be effective in improving gambling-related cognitions, increasing confidence in maintaining abstinence and reducing gambling behaviour and urges. Replication of the SCED methodology for this population with longer baseline and follow-up phases is recommended to help clarify and increase generalisability of these findings.

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1 Introduction

The first half of this chapter provides a background to the research. First, I will outline the context of problem gambling in the UK considering current understandings of addiction. The chapter will then explain problem gambling and the treatment options. Relevant literature to explore the treatment outcomes of those with problem gambling[1] will then be presented in order to contextualise the research question and approach.

1.1 Context of gambling in the UK

Gambling is the act of wagering money or other valuables on an event with an uncertain outcome with the hope of winning. The UK has one of the biggest gambling markets in the world, which generated a profit of £14.2 billion in 2020 (Public Health England, 2020). In the UK, 44% of the population engage in gambling each month. The National Lottery is the most common type of gambling among gamblers (35%), followed by other lotteries, scratchcards and sports betting. Gambling is most common in people aged 45-64, and men are more likely to gamble than women (Gambling Commission, 2023).

The Gambling Act 2005 introduced major changes to the law following a review of gambling by the Home Office in 2000. Known as The Budd Report, the review recommended measures to liberalise the regulation of gambling in order to "promote the greatest benefits to consumers". Such changes included: a wider availability of gambling activities within gambling venues; abolition of the demand test for betting shops, bingo halls and casinos, so that licenses can be granted to new gambling premises without the demonstration of demand; abolition of the 24-hour delay between gaining membership and being able to gamble;

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[1] Although I am using the term problem gambling, the terms gambling disorder, disordered gambling and gambling addiction are additional terms used in the literature and so will be included in this thesis.

introducing unlimited stakes and prizes within gambling venues; and allowing gambling operators to advertise across all media (House of Lords, 2020).

Since the Gambling Act 2005 there have been some minor changes to the legislation, for example, banning gambling on credit cards, reducing the maximum stake on gaming machines in betting shops from £100 to £2, and making it mandatory for online operators to be signed up to the national online self-exclusion scheme (Department for Digital, Culture, Media & Sport, 2020). Gambling operators have made some efforts to respond to public concerns, for example, banning televised betting advertising during live sport before the watershed (Betting and Gaming Council, 2023).

Otherwise, the main strategy for reducing gambling harms has been a focus on the promotion of responsible gambling. The most recent campaign from GambleAware, "Bet regret", encourages gamblers to resist making impulsive bets by setting limits, betting only what they can afford and to take a moment to consider the sensibility of their bets before they place them (Gunstone, 2021). However, the slogan "When the FUN Stops, Stop", was found to have no impact on reducing problem gambling (van Schalkwyk et al., 2019) and the emphasis on the word "Fun" was thought to actually promote gambling. There is insufficient evidence to indicate that the promotion of responsible gambling reduces problem gambling (Ladouceur et al., 2017). In fact, evidence suggests that the only effective way to manage problem gambling is by reducing availability (Chóliz, 2018).

Charities who support people with gambling problems argue that the promotion of responsible gambling deflects attention away from the role of the gambling industry (Gambling With Lives, 2022). Chóliz (2018) argues that the promotion of responsible gambling is at odds with the commercial business model and therefore gambling organisations are unlikely to genuinely want to reduce gambling activity. Indeed, it has been estimated that individuals with gambling problems make up just 5% of betting customers, and

yet they account for 60% of profits (House of Lords, 2020). Estimates of problem gambling rates are difficult to measure accurately, particularly because there is no public health strategy for problem gambling and so it is not acknowledged or integrated into national healthcare in the same way as other mental health conditions. This means that there is no system of identification and no systemic pathways for those with low to moderate level harms; nearly all referrals to the NHS gambling treatment service are self-referrals (Gaskell, 2022). Under the current National Responsible Gambling Strategy, operators are asked to contribute a voluntary contribution of at least 0.1% of their annual gross gambling yield towards GambleAware in the UK, which is the body that is responsible for treatment and research (GambleAware, 2023). Although gambling companies donated £1.2 million in 2020-2021, this only covers half of the running costs of the NHS gambling clinics in the UK (Dugan, 2022). In July 2019, leading operators pledged to increase their donations ten-fold over the next four years (Department for Digital, 2020). However, the NHS Gambling Treatment Service has raised concerns that gambling addiction in the UK is a public health crisis and that as long as gambling treatment, research and education is in the hands of the gambling industry, there is limited scope for the systems to effectively prevent gambling harms and support people who have gambling problems (Gaskell, 2022). In 2022, the NHS Gambling Treatment Service made the decision to no longer accept funds or donations from charities related to the gambling industry in the hope that independent funding would lead to a better public health framework and prevention strategy (Dugan, 2022).

In December 2020, the UK government announced a review of the Gambling Act 2005 to "make sure it is fit for the digital age" (Department for Digital, Culture, Media & Sport, 2020). Since the 2005 legislation there have been significant changes in gambling behaviour, for example, in 2007, 6% of the population used the internet to gamble (Wardle et al., 2007) in comparison to 25% in 2021 (Gambling Commission, 2020). However, there are

concerns beyond the digitisation of gambling. There are calls for the new legislation to incorporate significant changes that include limiting the availability of gambling activities; protecting children by banning gambling advertisements in sport; applying a mandatory levy whereby companies who are most responsible for gambling harms contribute more towards treatment and research; and providing the Gambling Commission with greater enforcement powers (Gambling Related Harm All Party Parliamentary Group, 2020). The review of the Gambling Act is ongoing; however, it has been notably hampered by a lack of evidence due to research underfunding (Gaskell, 2022). The White Paper was released in June 2023, however, this has been criticised due to the proposed reforms appearing to ignore the evidence submitted and the level of affordability checks and capped stakes on online slots are unlikely to have a substantial impact on gambling harms (Gaskell, 2023). It has been acknowledged that a large-scale gambling prevalence study is needed to appropriately develop legislation and treatment (Gambling Related Harm APPG, 2020). Meanwhile, referrals to NHS gambling clinics are rapidly increasing with increases of 80% observed from 2020-21 to 2022-23 (NHS England, 2023).

1.2 Gambling Disorder

Gambling Disorder (GD) is the only classified behavioural addiction under the Addictive Disorders category in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychological Association, 2013). It is characterised by preoccupation with gambling; repeated unsuccessful attempts to control or stop gambling; financial difficulties; increase in gambling expenditure to achieve the same level of excitement; the need to "chase" losses by betting more money to get even; attempting to conceal extent of gambling; jeopardising relationships, education or employment as a result of gambling; a negative impact on psychological health, including stress, anxiety or guilt; as well as having a

negative impact on family and significant others (American Psychological Association, 2013). GD had previously been listed as "Pathological Gambling" under Impulse Control Disorders but has been reclassified due to a consensus in the DSM workgroup for substance-related disorders, recognising that gambling disorder has greater similarity with substance use disorders than impulse control disorders (Petry et al., 2014).

Given that gambling disorder is regarded as being similar to substance addiction, the understanding of gambling disorder and potential appropriate treatments has been led by the more substantial evidence base for substance misuse. Therefore, a review of the etiology and treatment evidence base for substance use will be discussed alongside the developing literature for gambling addiction.

The DSM-5 specifically lists nine types of substance addictions within the Substance-Related and Addictive Disorders category (alcohol; caffeine; cannabis; hallucinogens; inhalants; opioids; sedatives, hypnotics, and anxiolytics; stimulants; and tobacco). All are drugs that when taken in excess activate the brain reward system, which is a universal network in all sentient beings that encourages them to seek out pleasurable experiences (Esch & Stefano, 2004). The primary function of this system is to motivate behaviours that ensure survival of the species, such as eating or procreating. The above substances intensely activate this system and repeated exposure causes brain changes. These changes result in tolerance of the substance, so that a person will need increased quantities of a substance to achieve the same reward (Altman et al., 1996). Brain changes also create dependence on the substance, where neurons will only function in the presence of the drug and when the substance is withdrawn, physiological reactions occur.

The theoretical understanding of how addictions are developed and maintained encompasses biological, psychological and social factors. Biological explanations consider substance use, and other behavioural addictions including gambling, to be due to dopamine-

mediated changes in the brain (Volkow et al., 2009) and that there are genetic markers for addiction (Wang et al., 2019). However, critics of the model argue that the idea that addiction is a chronic, relapsing condition is challenged by the common occurrence of "spontaneous recovery", where substance addicts become abstinent without any intervention (Mocenni et al., 2019). Gambling addiction and substance addiction have high rates of comorbidity and there is some research that demonstrates that they have common genetic vulnerabilities (Petry et al., 2014). Functional neuroimaging studies have demonstrated that gambling addicts have a blunted neural response to monetary gains and appetitive cues, which indicates that they experience tolerance in a similar way to substance addiction (Clark et al., 2013). Dopamine synthesis capacity is higher in gambling addicts (van Holst et al., 2018). Furthermore, greater dopamine release is observed in the dorsal striatum of individuals with gambling addiction (Joutsa et al., 2012). The role of dopamine and the reward pathway in gambling addiction is clear due to the increased risk of problem gambling in Parkinson's patients who are prescribed dopamine agonist medication (Heiden et al., 2017). However, evidence suggests that viewing addiction as a biological abnormality perpetuates ostracism from others and increases the public perception of addicts lacking self-control, and being unpredictable or dangerous (Buchman & Reiner, 2009).

Psychological perspectives propose that addictions develop through interaction with a person's environment and the development of cognitions that promote this behaviour. Social learning theory (Bandura, 1977) proposes that much of human behaviour is learned through observation and imitation of others, particularly if the behaviour results in positive consequences. Therefore, the initiation of substance misuse behaviour can be influenced by others. This behaviour can be reinforced by positive reinforcement such as praise or inclusion, or negatively reinforced by ostracism or rejection (Smith, 2021).

The development of substance use behaviour can be explained by evidence that suggests individuals with substance use problems have favourable implicit attitudes towards substances (Rooke et al., 2008). Three types of cognitive bias contribute to the development and maintenance of substance use: attentional bias, memory bias and approach bias (Stacy & Wiers, 2010). Substance addicts show an attentional bias towards substance-related cues (Marks et al., 2015) and disordered gamblers show an increased attentional bias to gambling stimuli in comparison to non-disordered gamblers (McGrath et al., 2018). Positive memories of substances (McCusker, 2001) or gambling (Russell et al., 2019) are more readily accessible. Substance addicts are more likely to approach substances in comparison to moderate users (Watson et al., 2012) and disordered gamblers are more likely to approach gambling stimuli than moderate users (Boffo et al., 2018). There are three common erroneous beliefs specific to disordered gamblers: an over estimation of the chance of winning, beliefs that their skill can influence gambling outcomes and incorrect beliefs about independent events and randomness (Ladouceur et al., 2001). Often, early big wins can instigate the development of disordered gambling as it can lead to a distorted perception of the likelihood of winning (Edson et al., 2023). Disordered gamblers exhibit superstitious beliefs more often than the general population (Abdollahnejad et al., 2014; MacLaren et al., 2015). They are also more likely to prefer smaller immediate rewards rather than delayed larger rewards, demonstrating an inclination for instant gratification (Grant et al., 2016). Individuals who have high impulsivity, negative psychological states and difficulty recognising and expressing emotions are observed to be at increased risk of developing gambling addiction (Moreira et al., 2023).

Evidence suggests that early maladaptive schemas are associated with addiction. Schemas are formed in early life and are beliefs about a person, others and the environment. Early maladaptive schemas include beliefs about disconnection/rejection, impaired

autonomy/performance, impaired limits, other directedness and over vigilance/inhibition. Research shows that people who develop addictions tend to have more early maladaptive schemas than non-clinical groups (Razavi et al., 2012) and individuals with gambling addiction have more early maladaptive schemas that individuals with alcohol addiction (Shorey et al., 2012).

Learning theory explains how addictive behaviours are maintained through classical and operant conditioning (Skinner, 1963). In operant conditioning, behaviours that are pleasurable and provide a reward are reinforced. The pharmacological effects of substances are reinforcing and withdrawal from the substance is a negative reinforcer, i.e. behaviours are repeated to remove unpleasant consequences. In the same way, the excitement of gambling or removal of negative emotional states is reinforcing. Gambling operates on an intermittent schedule of reinforcement which leads to a faster development of behaviour that is resistant to extinction (Sharpe, 2002). Within gambling, "near misses" where the gambler almost wins can be just as reinforcing, for example, a horse finishing in second place (Clark et al., 2009). Losses disguised as wins are particularly relevant in gambling machines. This is where the gambler wins back less money than they wagered, and the wins are usually accompanied with the lights and sounds associated with a win and are therefore reinforced (Myles et al., 2023). Repetition of addictive behaviours allows pairing of previously unconditioned neutral stimuli to be associated with the effects of using substances or gambling. This leads to physiological responses in response to neutral stimuli, such as substance use paraphernalia or environments where substances are taken or visual cues from gambling machines or betting environments. This explains how cravings for substances can be triggered by an addict's environment.

In terms of environmental factors, presence of and proximity to addictive products is associated with increased use, including alcohol outlets (Chen et al., 2010; Halonen et al., 2013; Kypri et al., 2008; Wang et al., 2013), tobacco outlets (Cantrell et al., 2016; Novak et

al., 2006) and gambling premises (Welte et al., 2016). Evidence suggests that alcohol and tobacco outlets (Mennis et al., 2016) and opportunities to gamble (Adeniyi et al., 2023) are disproportionately located in socioeconomically disadvantaged areas. Low socioeconomic status is associated with increased smoking (Hiscock et al., 2012) and substance misuse (Beard et al., 2019). Gambling expenditure and rates of problem gambling are higher among low-income groups (Badji et al., 2023; Latvala et al., 2021), the unemployed (Latvala et al., 2021), and those who have credit repayments (Brown et al., 2012). Individuals with low economic status are more likely to play the lottery (Fu et al., 2021). Disadvantaged areas have less opportunities for pro-social and environmental resources to mitigate risk of substance misuse and less opportunity to access treatment (Mennis et al., 2016). Furthermore, there is an association between adverse childhood experiences and developing substance use disorders in adolescence and adulthood (Leza et al., 2021; Moustafa et al., 2021) and developing a gambling disorder (Poole et al., 2017).

Gambling disorder has high rates of co-morbidity with other mental health disorders and this has been considered to be the rule rather than the exception (Yakovenko & Hodgins, 2018). In a systematic review of treatment-seeking gamblers it was estimated that 75% met criteria for a current co-morbid Axis I disorder (Dowling et al., 2015). Substance addictions have been reported to have rates of comorbidity as high as 88% among gamblers (Mann et al., 2017) and up to 50% of individuals with a substance addiction also having gambling problems (Grant & Chamberlain, 2020). In terms of other excessive behaviours, problem gambling is associated with daily tobacco use, problematic shopping and problem gaming (Ford & Håkansson, 2020). Gambling addiction is also associated with obesity and poorer physical health (Loo et al., 2019). Gambling disorder is associate with suicidality (Wardle & McManus, 2021) and this risk is increased for those with poor physical health, alcohol disorder, depression and/or mood disorders (Armoon et al., 2023). Significant associations

between gambling and substance use, mood, anxiety, and personality disorders have persisted when controlling for sociodemographic and socioeconomic characteristics (Petry et al., 2005).

Researchers have hypothesised that some psychiatric disorders could be considered risk factors for developing problems with gambling where gambling is a coping strategy to manage symptoms (Shek et al., 2012). This is supported by a study of individuals with major depressive disorder or bipolar disorder, where 70% of participants reported that their disorder preceded development of gambling problems (Kennedy et al., 2010). Alternatively, mental health symptoms may develop due to the negative consequences of gambling, including relationship breakdown or financial difficulties (Shek et al., 2012). This is supported by evidence that problem gambling predicted the onset of generalised anxiety disorder, post-traumatic stress disorder, and substance dependence (Kessler et al., 2008). However, there is limited research to identify the mechanisms underlying co-morbidity in problem gambling (Yakovenko & Hodgins, 2018).

1.3 Integrated models of gambling

1.3.1 Pathways Model of Problem Gambling

The most widely used model of gambling behaviour is the Pathways Model of Problem Gambling (Blaszczynski & Nower, 2002). This was the first conceptual theoretical model of gambling that sought to identify determinants of problem gambling and attempted to challenge the idea that individuals with gambling problems were a homogenous group. From this, they classified gamblers according to three distinct subgroups, (a) behaviourally conditioned gamblers, (b), emotionally vulnerable gamblers and (c) antisocial, impulsivist gamblers. The model builds on the addictions model in that it recognises that all pathways experience the same ecological determinants, conditioning processes and cognitive schemas.

The first subgroup, the "behaviourally conditioned" gamblers, are fundamentally considered "regular" gamblers who have reached excessive levels of gambling due to the effects of conditioning, cognitive distortions and poor decision-making. This group of gamblers is characterised by an absence of premorbid psychopathology but exhibit high levels of depression and anxiety in response to the consequences of their gambling behaviour. The authors state that this group are motivated to attend treatment, comply with treatment and might be able to return to controlled levels of gambling after treatment. The second subgroup are the "emotionally vulnerable" gamblers. Unlike pathway one gamblers, this subgroup has pre-morbid anxiety or depression, a history of poor coping, and previous negative life events. For this group, gambling is motivated by a desire to regulate negative emotional states or meet other psychological needs. Gambling is viewed as an emotional escape through dissociation. The authors explain that this group are more resistant to change and will need treatment that addresses their underlying vulnerabilities as well as their gambling behaviour. The third pathway, the "antisocial impulsivist" gambler, is distinguished by impulsivity, antisocial personality disorder and attentional deficits. They have a wider range of behavioural problems in addition to their gambling, including substance abuse, suicidality, criminal behaviour and a low tolerance of boredom. The authors explain that these gamblers are less motivated to seek treatment and have poor compliance rates. The pathways model is useful in demonstrating that although all individuals with gambling problems display observable common features, there are three distinct profiles of gamblers who differ in terms of aetiology, their prognosis and the necessary approaches to management and treatment.

Figure 1

Bonnaire and Billieux (2022) adaptation of the psychological model of Kinderman and Tai (2007) based on the Pathways Model.
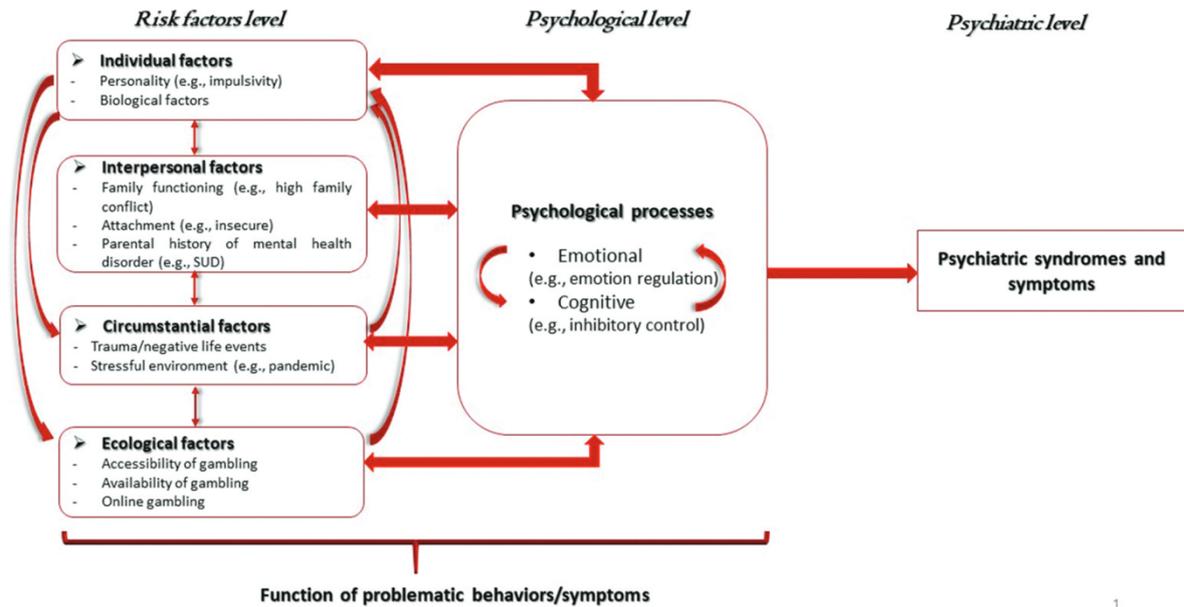
1.3.2 Psychological Processes Model

Although the Pathways model has some clinical utility in categorising individuals with gambling problems, some authors have suggested that clinical reality is more complex than proposed within the model. Bonnaire and Billieux (2022) adapted the psychological processes model of mental illness developed by Kinderman and Tai (2007) to provide an explanatory biopsychosocial model of gambling addiction (see Figure 1.)

The first level of the model comprises risk factors that lead to gambling. This involves ecological factors referring to culture and availability of gambling in their environment; circumstantial factors that correspond to negative life events or stressful environments; interpersonal factors including familial relationships; and intrapersonal factors including biology and personality. These factors interact with psychological processes in the second level of the model, including cognitions (e.g. gambling-related distortions and biases) and affective processes (e.g. emotional regulation strategies). The third level involves psychiatric

syndromes and symptoms associated with gambling addiction, typically Gambling Disorder, but could also include common co-morbidities such as depression, substance misuse or mood disorders. The model can be utilised to develop individualised treatment for gamblers in each of the subtypes in the Pathways model by considering treatment suitability, relevant harm reduction methods and identifying target psychological processes.

1.4 Treatments

Formal interventions for gambling addiction include pharmacological and psychological treatments. Given that there continues to be a public narrative that the responsibility for management of gambling addiction lies with the gambler, it is also important to consider the methods available to gamblers to limit risk of addiction and manage their addiction independently, including gambling reduction tools, self-exclusion schemes and peer support. These will be considered first, before discussing pharmacological and psychological treatments.

1.4.1 Gambling Reduction Tools, Self-Exclusion Schemes and Peer Support

In the UK, all gambling operators include harm-minimisation tools designed to help the gambler to control their gambling. These usually involve enforced breaks in play or setting limits on their gambling. Gamblers can enter a state of dissociation which leads to a loss of control over the time and money they spend gambling (Grant & Kim, 2003). Enforced breaks should theoretically reduce continuation of gambling as this draws attention away from gambling and breaks the dissociative state. However, there is limited evidence that breaks in gambling reduce the cravings to continue playing (Hopfgartner et al., 2023) and there is evidence that breaking from gambling increases the intensity of cravings (Blaszczynski et al., 2016).

Limit setting allows gamblers to decide on how long they would like to play for or how much money they would like to spend before they gamble. It allows for these decisions to be made when the gambler is not emotionally aroused and for these to be implemented during play when the gambler is emotionally aroused and less likely to make the same rational decision. Evidence suggests that individuals with gambling problems are more likely to exceed time limits they set in comparison to regular gamblers (McDonnell-Phillips, 2006; Wiebe et al., 2006; Wohl et al., 2010; Wohl et al., 2008; Wood & Griffiths, 2015). Setting budget limits has been found to reduce money spent by individuals with gambling problems but does not impact the amount wagered per bet (Nelson et al., 2008). Implementation of time limit setting and monetary limit setting has been found to reduce losses in high intensity gamblers (Auer & Griffiths, 2013). Evidence suggests that messages reminding gamblers of their monetary limit resulted in them being less likely to exceed their limit (Auer et al., 2014).

Gamblers can self-exclude themselves from gambling operators so that they are unable to access them. There are several multi-operator self-exclusion schemes in the UK, including MOSES (Multi-Operator Self Exclusion Scheme; for bookmakers premises), Gamstop (for online websites) and Gamban (installable software that blocks gambling apps on devices). These exclusions are set for a fixed period (usually between 12 months and 5 years) and require renewal when they expire. Many banks also offer gambling transaction blocking and cooling off periods. Self-exclusion programmes have appeared to be an effective strategy for reducing gambling behaviour (Hing et al., 2015; Ladouceur et al., 2007) and improving psychosocial functioning (Hayer & Meyer, 2011; Ladouceur et al., 2017). Evidence suggests that many self-excluders return to gambling after the exclusion period expires (Cohen et al., 2011). Self-exclusion schemes are not infallible and there is evidence to suggest that a proportion of gamblers do breach self-exclusion schemes, with reports from

three studies where between 26.6% and 60% of participants returned to gambling during a period of self-exclusion (Ladouceur et al., 2007; Ly, 2010; Nelson et al., 2010).

Gamblers Anonymous (GA) groups are mutual aid groups that are based on 12 step principles (Schuler et al., 2016). This approach was first developed for alcohol addiction and has been applied to other addictive or dysfunctional behaviours. The 12 steps are as follows; admit powerlessness; find hope; surrender; take inventory; share inventory; become ready; ask God; make a list of amends; make amends; continue inventory; pray and meditate; and help others. GA groups also have the additional focus of financial difficulties caused by gambling. GA groups have been reported to increase commitment to abstinence (Straus, 2006), increase hope (Avery & Davis, 2008) and feelings of belonging (Avery & Davis, 2008; Straus, 2006). However, RCTs have demonstrated that attendance is less effective than other treatments, including cognitive behavioural therapy (Petry et al., 2006), stress management (Linardatou et al., 2014), and imaginal desensitisation with motivational interviewing (Grant et al., 2009). In contrast, evidence suggests that 12-step programmes that are delivered in a structured format with counsellers as effective in reducing gambling severity as cognitive behavioural therapy (Marceaux & Melville, 2011; Toneatto & Dragonetti, 2008).

1.4.2 Pharmacological treatments

The evidence available for pharmacological treatments is scarce but there has been research exploring the effectiveness of antidepressants, opioid antagonists and mood stabilisers. There are currently no medications that have been granted regulatory approval for the treatment of gambling disorder. Antidepressants are the most commonly researched medications. Due to the association between the serotonin system and impulse control, gambling disorder is hypothesised to be associated with decreased serotonin function and

therefore selective serotonin reuptake inhibitors (SSRI) have been researched as a potential treatment (Grant & Kim, 2006). Results for SSRIs have been inconclusive, with the majority of randomised controlled trials finding non-significant effects in comparison with placebo for paroxetine (Grant et al., 2003), fluvoxamine (Blanco et al., 2002), sertraline (Saiz-Ruiz et al., 2005) and only one trial of paroxetine finding a significant effect in comparison with placebo (Kim et al., 2001; Kim et al., 2002). Better outcomes have been reported in uncontrolled trials, where significant improvements in gambling severity were observed for citalopram (Zimmerman et al., 2002), fluvoxamine (Hollander et al., 2000) and the serotonin modulator nefazodone (Pallanti et al., 2002a). A controlled trial of bupropion found no difference to placebo (Black et al., 2007). Due to the role of dopaminergic systems in gambling, opioid antagonists have been identified as a potential treatment for gambling due to their ability to inhibit dopamine release and thus reducing gambling-related excitement and cravings. In a double-blind placebo-controlled trial of naltrexone, gambling behaviour and the frequency and intensity of urges were reduced (Kim et al., 2001). Nalmefene demonstrated a significant improved in gambling symptoms in comparison with placebo in a double-blind trial (Grant et al., 2010). There are uncontrolled trials for mood stabilisers where significant improvements in gambling symptoms have been observed for lithium (Hollander et al., 2005; Pallanti et al., 2002b), valproate (Pallanti et al., 2002b). Mood stabilisers topiramate (Berlin et al., 2013) and olanzapine (Fong et al., 2008; McElroy et al., 2008) were no more effective than placebo. It is of note that for all studies discussed here, there was no long-term follow up. Overall, there is some evidence to indicate that antidepressants, opioid antagonists and mood stabilisers can be effective in reducing gambling severity. However, due to these findings being found in only a small number of low-quality trials without long-term outcomes, there is little convincing evidence of their effectiveness.

1.4.3 Psychological Treatments

As yet, there are no NICE guidelines for psychosocial treatment of Gambling Disorder. For substance addictions, NICE guidance recommends brief interventions that explore ambivalence about drug use and increasing motivation to change behaviour, self-help groups that are based upon the 12 step principles and psychotherapeutic interventions including behavioural couples therapy, psychodynamic therapy and cognitive behavioural therapy (National Institute for Health and Clinical Excellence, 2007). Therefore, treatment for gambling addiction has been approached in a similar way. Psychological therapies that have been proposed and explored include cognitive behavioural therapy and/or brief interventions using a motivational interviewing approach.

Cognitive Behavioural Therapy (CBT). CBT is based on cognitive and behavioural theories of mental illness and is a time limited, structured therapy that explores the links between thoughts, emotions and behaviours (Fenn & Byrne, 2013). The cognitive model (Beck, 1964) was initially developed for explaining the psychological processes of depression and proposes that a person's emotions and behaviours are influenced by the way they perceive events. This is a two-way relationship whereby a person's behaviour can also shape their thoughts and emotions (Beck, 2005). Therapy aims to disrupt the cycle at either the cognitive or behavioural level and encouraging more adaptive responses (Wright, 2006). Cognitive methods may involve examining the evidence that underpins beliefs and finding new perspectives. Behavioural methods include gradual exposure to situations to develop a sense of mastery and/or pleasure.

Cognitive Behavioural Therapy in addictions. CBT has been used as a treatment for substance use disorders. In practice, the format can vary but usually includes the following components: motivational interventions that target ambivalence towards behaviour change; psychoeducation of addiction; cognitive reappraisal; countering the behavioural

reinforcement of substances by abstaining from substances and identifying alternative rewards; developing a functional analysis of high-risk cues for substance misuse and the identification of alternative responses (McHugh et al., 2010). CBT has been found to be effective in the treatment of substance addictions (Magill et al., 2019).

Cognitive Behavioural Therapy for gambling addiction. Theoretically, CBT lends itself well to behavioural addictions such as gambling. CBT can be used to challenge people's erroneous beliefs around gambling, such as having overconfidence in their ability to win and beliefs that certain rituals will achieve a win (Ribeiro et al., 2021). It allows for the development of cognitive skills and the use of behavioural and emotional techniques to reduce responses to triggers for gambling.

The bulk of the treatment research literature for gambling addiction has been conducted using CBT. Improvements have been observed in the severity of gambling problems as rated by diagnostic criteria (Carlbring et al., 2010; Echeburúa et al., 2000; Ede et al., 2020; Harris & Mazmanian, 2016; Ladouceur et al., 2003; Ladouceur et al., 2001; Larimer et al., 2012; Marceaux & Melville, 2011; McIntosh et al., 2016; Myrseth et al., 2009; Thomas et al., 2015); money spent on gambling (Carlbring et al., 2010; Dowling et al., 2007; McIntosh et al., 2016; Myrseth et al., 2009); frequency of gambling (Dowling et al., 2007; Harris & Mazmanian, 2016; Ladouceur et al., 2001; Marceaux & Melville, 2011; McIntosh et al., 2016; Oei et al., 2018; Thomas et al., 2015) and time spent gambling (Carlbring et al., 2010; Dowling et al., 2007; Thomas et al., 2015); reduced illusion of control (Larimer et al., 2012); reduced desire and increased self-efficacy (Ladouceur et al., 2001; Marceaux & Melville, 2011). CBT has been effective in reducing anxiety and depression in individuals with gambling problems (Carlbring et al., 2010; Dowling et al., 2007; Nilsson et al., 2020; Oei et al., 2010). CBT has also been effective in improving quality of life for individuals with gambling problems (Carlbring & Smit, 2008; Casey et al., 2017; Grant et al., 2009; Oei et al.,

2010; Oei et al., 2018), although not observed in all studies (Casey et al., 2017) and in one study this benefit was only observed when CBT was delivered following a mindfulness treatment (McIntosh et al., 2016). In terms of understanding the effective elements of CBT, one RCT found that cognitive therapy is as effective as behavioural exposure therapy in reducing gambling (Smith et al., 2015a). CBT has been found to be effective in both group (Dowling et al., 2007; Ede et al., 2020; Harris & Mazmanian, 2016; Jiménez-Murcia et al., 2007; Ladouceur et al., 2003; Larimer et al., 2012; McIntosh et al., 2016; Myrseth et al., 2009) and individual formats (Myrseth et al., 2011; Thomas et al., 2015). When the two formats have been compared there have been mixed reports where they had equal effectiveness (Echeburúa et al., 2000), and some evidence that individual format is superior (Oei et al., 2010) particularly in the longer term (Bodor et al., 2021).

In comparison trials, CBT has been found to be no more effective in reducing gambling severity than a personalised feedback intervention (Larimer et al., 2012), a 12-step treatment programme (Marceaux & Melville, 2011), behavioural couples therapy (Nilsson et al., 2018; Nilsson et al., 2020) and a motivational interviewing intervention (Carlbring et al., 2010). There is one comparison trial where CBT was found to be more effective than Gamblers Anonymous (Petry et al., 2006).

Brief therapies including Motivational Interviewing

Motivational interviewing (MI) therapy is often used with individuals with gambling problems. This approach works by exploring ambivalence in order to improve motivation to change behaviour and pursue treatment (Miller & Rollnick, 2013). It is particularly beneficial for addictive disorders due to the non-judgmental and non-confrontational approach, which helps to reduce the guilt and shame associated with gambling and which often presents as a barrier to treatment (Ribeiro et al., 2021).

Single-session and brief therapies are particularly relevant for this population in light of the limited treatment completion rates (Quilty et al., 2019). Several studies have demonstrated that single-session therapy improves problem gambling behaviours and has comparable outcomes to six sessions of cognitive therapy, behavioural therapy or motivational enhancement therapy (Toneatto, 2016), better outcomes than a waitlist control (Carlbring et al., 2010), 6 session psychotherapy (Larimer et al., 2012) and similar outcomes to a single session of motivational interviewing plus 3 sessions of CBT (Petry et al., 2008; Petry et al., 2009). Non-therapeutic single sessions are also effective; providing gamblers with Brief Advice was found to have better outcomes than both single session motivational interviewing and motivational interviewing plus CBT (Petry et al, 2008). It is notable in this study participants were not treatment seekers and were recruited by using gambling screening tools in other clinics (e.g. medical, substance misuse treatment). The authors reasoned that the assessment alone may have raised awareness of their own gambling and encouraged motivation to change their behaviour.

It should be noted that in the evidence for single-session therapies, the comparison groups often have high non-completion rates (Petry et al., 2008; Petry et al., 2009) and so comparable outcomes are potentially due to both conditions being brief. However, this further emphasises the difficulties in engaging this population and highlights the rationale for an effective single-session therapy format. The researchers suggested that gambling problems can fluctuate over time without any formal intervention (Petry et al., 2006). Gambling behaviour has been observed to improve where individuals with gambling problems were allocated to an assessment only control group (Petry et al, 2008). However, engagement alone is not always effective as research using single sessions of brief advice had inconsistent outcomes in comparison to controls (Cunningham et al., 2012; Martens et al., 2015;

Neighbors et al., 2015). Therefore, it is difficult to draw robust conclusions about the mechanism of change in this evidence base.

Evidence suggests that completing self-help programmes, in workbook (LaBrie et al., 2012; Oei et al., 2018) or online formats (Carlbring & Smit, 2008; Casey et al., 2017) can also be effective and had similar outcomes to a single session of MI (Diskin & Hodgins, 2009). However, patients tended to have better outcomes when given some contact with a therapist, either by telephone or face-to-face (Hodgins et al., 2009; Hodgins et al., 2001). It is thought that self-help formats help to overcome barriers to engagement. This is helpful where patients are embarrassed about their gambling, as self-help formats provide anonymity. Accessing appointments can also be difficult for gamblers who may have work commitments or cannot afford to travel due to financial difficulties linked to their gambling.

1.5 Individual factors impacting treatment

Researchers have attempted to pinpoint factors within the individual that may impact treatment efficacy and/or dropout. However, this has generated contradictory findings. Therapy outcomes are worse for individuals who have a higher severity of gambling disorder symptoms pre-treatment (Casey et al., 2017; Jiménez-Murcia et al., 2007; Pallesen et al., 2005) including having greater cognitive distortions related to gambling (Goodie & Fortune, 2013; Ledgerwood et al., 2020). Factors that are known to be associated with higher risk of gambling harm are also associated with worse outcomes, including greater levels of impulsivity (Álvarez-Moya et al., 2011; Ledgerwood et al., 2020; Ramos-Grille et al., 2015) and sensation-seeking (Smith et al., 2010); starting gambling at a younger age (Merkouris et al., 2016); higher levels of distress (Jiménez-Murcia et al., 2007); a lack of social support (Merkouris et al., 2016); a greater tendency for harm avoidance and a lower level of self-direction (Lara-Huallipe et al., 2022); greater alcohol consumption, lower work-life

satisfaction and being a gambler who gambles dissociatively (Carlbring et al., 2012). It should be noted that adverse outcomes have also been associated with younger adults (Aragay et al., 2015) as well as older adults (Casey et al., 2017; Merkouris et al., 2016) and lower debts, (Lara-Huallipe et al., 2022; Merkouris et al., 2016) as well as greater debts (Carlbring et al., 2012). This demonstrates how specific factors are inconsistent in predicting outcomes in gambling addiction recovery and there is likely a complex interaction of factors for each individual. Conversely, protective factors for gambling harm are associated with better outcomes in therapy, including social support (Jiménez-Murcia et al., 2017; Petry & Weiss, 2009), having a temperament with greater persistence (Jiménez-Murcia et al., 2007) and perseverance (Mallorquí-Bagué et al., 2019), being employed (Lara-Huallipe et al., 2022) and attending more therapy sessions (Carlbring et al., 2012).

1.6 Gaps and critique of the literature

There is limited high quality research from which to draw conclusions and outcomes have not been consistent across the literature, which has made it difficult to establish an evidence-based treatment for gambling disorder. The key issues within the literature are outlined below.

1.6.1 Inconsistent measurement of recovery

Across the outcome literature, the efficacy of treatment is often measured differently and may not always include abstinence. A review by Pickering et al. (2018) identified 62 different outcome measures across 34 studies investigating therapy outcomes for problem gambling. Most studies included time spent gambling or the number of times they gambled, the amount of money spent on gambling and a measure of psychological functioning via self-report questionnaires or DSM criteria. Variations in the outcome measures used mean that

baseline severity and rate of recovery may not be comparable or representative of the population. In the review they noted that only a third of studies provided an operational definition of recovery. Therefore, it is difficult to know whether recovery has been achieved and consequently whether a treatment is effective. Pickering's review (2018) stated that where the definition of recovery had been explained, it was usually related to abstaining from gambling or no longer meeting the DSM criteria. In the review only two of the 34 studies measured patient treatment goals as outcome measures, which highlights how gamblers' attitudes may not be consistent with the researcher's chosen measures of treatment effectiveness.

1.6.2 Poor isolation of the independent variables

Many of the studies discussed in the review of psychological treatments for gambling addiction had multiple different variables in each treatment condition. For example, a randomised clinical trial where a single personalised feedback session was compared to a group programme of four to six sessions (Larimer et al., 2012). This makes it difficult to attribute differences in outcomes to either a) the number of sessions, b) individual or group formats, c) the model of therapy used. Furthermore, with regards to the treatment used, most studies did not comment on how treatment fidelity was assessed and therefore it is difficult to attribute outcomes to the treatment if there is no convincing evidence that this is what the patients received.

1.6.3 Limited ecological validity

While randomised controlled trials signify good quality research, the conditions of many of these studies might limit the ecological validity of the results. For example, in research where participants were excluded from the trial if they were experiencing suicidal

ideation (Smith et al., 2015), or had a recent or current substance use disorder (Grant et al., 2020). This is particularly problematic in practice because gambling disorder is known to be co-morbid with suicidal ideation/previous suicidal attempts (Petry & Kiluk, 2002) and has high comorbidity with other substance misuse difficulties (Grant & Chamberlain, 2016). Therefore, there is a lack of evidence for treating a significant portion of this population and Tolchard and Battersby (2013) state that patients with co-morbidities (essentially, the Emotionally Vulnerable subtype in Blaszczynksi & Nowers's Pathways Model; see p.11) tend to be the rule rather than the exception.

1.6.4 Limited follow-up periods

With very few studies using an extended follow-up period it is difficult to know the long-term outcomes of these therapies. In some research that incorporated a follow-up period, they found that differences in gambling severity at the end of treatment were not maintained at follow-up (Petry et al., 2006). In studies that reported comparable differences between two therapies post-treatment, it would be useful to know how these compare longer term as they may not be equal in that respect, and this is important for preventing relapse in problem gambling.

1.6.5 Limited consideration of drop-out

Evidence suggests that help-seeking is low among individuals with gambling problems, with estimates of 1 in 25 at moderate risk gamblers seeking help and 1 in 5 disordered gamblers seeking help (Bijker et al., 2022). There is evidence of high dropout rates in this population. Of those that accessed formal psychological therapy in the National Gambling Treatment Service, 24% dropped out before the treatment is due to end and of

those who do complete this treatment, 40% were still considered to be problem gambling at the end of therapy National Gambling Treatment Service (National Gambling Treatment Service 2020). This highlights that only a small proportion of individuals with gambling problems receive an effective treatment. The research evidence often only reports outcomes for participants who have completed treatment and so a significant proportion of gamblers are not represented in the evidence base.

1.7 Summary

There is an increasing demand for effective treatment for disordered gamblers. Recovery rates are hindered by a lack of a public health strategy, the increasing prevalence and limited regulation of gambling marketing, and stigma perpetuated by "responsible gambling" discourse in society. Therefore, it is important to develop a greater understanding of gambling addiction and identify appropriate psychological treatments. Gambling Disorder is a relatively recent addition to the DSM-IV and NICE guidelines have not yet been developed. Although research is being added to the field which indicates that CBT is a promising treatment intervention, there are few high-quality studies which provide convincing evidence that CBT is any better than other therapies. Some of the most problematic issues within the treatment evidence literature include: a lack of inclusion of individuals with gambling problems who have co-morbid complexities; an emphasis on a statistical reduction in outcome measures, rather than identifying whether treatment results in abstinence and/or satisfaction from service users; a limited consideration of the mechanisms of change in therapy and; limited long-term data. Therefore, research that could help advance the field would incorporate samples of gambling addicts with a broad inclusion criteria, an understanding of what treatment outcomes are important to gambling addicts, aim to pinpoint specific mechanisms of change and include extended follow-up periods.

1.8 Proposed Research

This research aims to help shed light on some of the questions raised by the literature through use of the single-case experimental design method (SCED). The research aims to answer the questions:

1. What does recovery look like for individuals with gambling problems?

2. How effective is a group CBT programme in reducing problem gambling?

3. What aspects of the programme are helpful/unhelpful for recovery and why is this?

2   Methods

2.1 Design

The research utilised a Single Case Experimental Design (SCED) with a post-treatment follow-up Change Interview (Elliott, 1999). The SCED method involves analysing data from a single participant. Participants complete multiple phases, usually a "reversal design" which includes a baseline phase, an intervention phase, and a final baseline phase where the intervention is withdrawn (Smith, 2012). SCEDs are similar to within-subject designs where participants act as their own control and differences in each phase are compared against each other (Epstein & Dallery, 2022). Measurement is conducted using a "funnel" format, which includes standard, target and process measures (see Figure 2). Standard measures are longer questionnaires with normative data and are completed pre and post treatment to assess if a participant's score has changed in a meaningful way. Target measures are more tailored to the individual in that they focus on measuring their experience of their specific complaint. They are designed to be conducted more frequently, e.g. weekly or daily, and can identify how the person's target problem changes over time. These can be conducted throughout baseline, treatment and follow-up periods. Process measures specifically measure the process of therapy and can include standardised or idiographic measures, such as measuring the impact of specific elements of therapy. These are generally measured during the treatment phase.

Figure 2

Funnel format of SCED measurement (Morley, 2018)
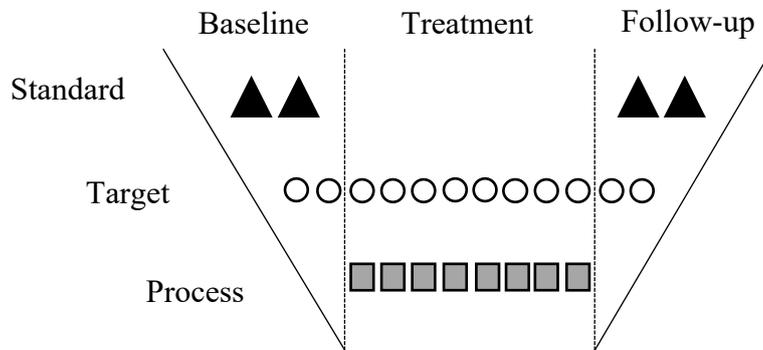
The SCED method is useful in identifying individual differences in response to treatment. Idiographic measures within the SCED allow for the bespoke measurement of an individual's specific target problems in response to the treatment provided (Perdices & Tate, 2009). In the case of psychological treatments where the goal is for sustained recovery, it provides scope to analyse whether changes during the intervention phase are maintained once the intervention is withdrawn (Smith, 2012). Baseline phases are useful in identifying fluctuations in symptom severity that might occur without intervention, which helps to limit errors in attributing causality to treatment factors. SCEDs are particularly useful in clinical settings as they can be incorporated in routine practice. This can aid understanding of conditions when there are barriers to implementing randomised controlled trials (RCTs), such as limited resources or when studying rarer conditions which might mean that a sufficient sample size cannot be achieved.

Therefore, the SCED method was considered appropriate for the research aims. Given that there is such inconsistency in how outcomes are reported within the gambling treatment literature, idiographic measures within the SCED allow for the bespoke measurement of the gambler's own goals for treatment. SCEDs also allow for a follow-up

period in order to see the trajectory of recovering gamblers following therapy. The SCED can easily be incorporated into a service that routinely offers treatment to individuals with gambling problems, which meant that the participants recruited would be a realistic representation of this population and that the treatment delivered would be indicative of how interventions are facilitated in practice. This is particularly useful for overcoming the barriers found in RCTs within the literature where strict exclusion criteria meant that 'typical' gamblers who generally have increased complexity were not represented within gambling treatment outcomes.

A qualitative, post-treatment Change Interview (Elliott, 1999) was added to the research design to allow for analysis of the processes involved in gambling behaviour change. The change interview is a semi-structured interview that enables the researcher to explore with the client how and why change happens. Given that research into gambling treatment has had limited success in identifying specific mechanisms of change, this element was considered essential for adding context to any changes that were observed during treatment.

2.2 Setting and Treatment

The Northern Gambling Service is a specialist gambling addiction clinic based in the north of England. It has satellite hubs in Leeds, Manchester and Newcastle and offers treatment to people living in Yorkshire, the North-West and the North-East of England. The service receives approximately 600 referrals per year. The majority of referrals to the service are self-referrals and there are no set acceptance criteria. The treatment pathway begins with an assessment of gambling difficulties. Following this, service users participate in a "Network Session" where they are able to consider the social support available to them and their caregivers are encouraged to attend this. Service users are also offered individual

motivational interviewing sessions to explore ambivalence around becoming abstinent from gambling and prepare them for participating in CBT.

The service offers a 9-week CBT programme delivered in group format (see Table 1). The group is delivered by facilitators based across all satellite hubs and is run online to be accessible to the wide geographical area which the service covers. Alternative treatments are offered for reasons such as patient preference (e.g. they are anxious about attending the group format), or other factors that might impact other group members (e.g. risk issues), or factors that might mean they would struggle to engage in the group format (e.g. language or functioning barriers, co-morbid presentations).

Table 1

Group CBT Programme Schedule

Session No	Focus	Aims	Homework Task
1	**Expert by Experience**	- To introduce members to the group format and to each other. - EbE story sharing, Q&A.	N/A
2	**Stimulus Control and Balance Sheet**	- To inform group members of habitual nature of gambling and to consider alternative methods of stimulus control to break habit. - To begin to evaluate the reasons for and against their gambling.	Institute or reinforce stimulus control techniques
3	**Use of balance sheet, rewards and tracking**	- To conclude discussion on use of balance sheet, to introduce cue cards and wrist bands - To instruct regarding the reasons for rewarding self - To open discussion on types of rewards - To introduce tracking graph	- Create cue cards and investigate use of these and wristband if appropriate - Investigate suitable reward schedule - Report back on use of tracking graph
4	**Coping with Urges and Cravings**	To discuss the concept of urges and cravings and provide instruction techniques that clients may utilise.	To develop awareness of urges and practice techniques to reduce arousal
5	**Alternative Pleasant Activities**	- To highlight the importance of replacing gambling with other activities - Introduce the idea of balanced lifestyle in terms of roles and activities	To investigate and attempt a new activity
6	**Trigger management**	To highlight the range of triggers that members are aware of	To isolate the most obvious or worrying trigger and come up with a

		• To model a method of finding solutions for obvious triggers	plan to prevent it leading to gambling.
7	**Challenging gambling thinking**	• To highlight types of thoughts associated with problem gambling • To investigate methods of coping with gambling thoughts	• To practice thought challenging techniques
8	**Understanding a lapse**	• To introduce a means whereby members can understand the process of a lapse • To highlight the frustration and conflict that can arise from resisting an urge • To re-emphasise coping methods and techniques that can be applied at different stages	• To analyse a lapse or urge using the functional analysis worksheet • To complete recovery map
9	**Future planning**	• To identify future high risk situations and prepare a crisis plan • To understand lapses and how to cope with them • To prepare a discharge care plan	• To continue working towards recovery

After the programme, service users may join the Recovery Group, a fortnightly peer support group that is led by clinicians and aims to support people to continue their recovery. Service users also receive a follow up individual clinical session at the end of the group. At this stage, there is the potential to be offered individual therapy for co-occurring mental health difficulties that are related to gambling problems or may increase risk of relapse.

2.3 Treatment Fidelity

It was considered important to ensure that the participants were receiving the treatment programme as it was intended. The treatment had a detailed manual which had a built-in checklist of the sections for facilitators to ensure they were covering the protocol by filling in the time spent on each section. It was planned to use this to monitor treatment fidelity.

2.4 Service User Involvement

Service users who attended the Recovery Group at the Northern Gambling Service were consulted in the development of this research. As the group is attended by individuals who have completed the group CBT programme, they were able to provide insight into the potential impact of this research on people attending the treatment. They were consulted on what measures might be most relevant for a gambling population; how participants might prefer data collection to be conducted; their preferences regarding incentives; terms used within the study and write up; and any concerns or ethical issues that they might anticipate. Outcomes from these discussions were incorporated into the design of the research.

2.5 Measures

Research measures included standard, target and process measures. These are detailed in Table 2. See Appendix C for measures.

Table 2

Measures and rationale

	Domain	Measure	Reason
Standard	Behaviour Change	PGSI *	Measure of gambling severity
	Clinical Distress	CORE-10 *	Measure of psychological distress
		PHQ-9 *	Measure of depression symptoms
		GAD-7 *	Measure of anxiety symptoms
	Symptom Interference	WSAS *	Measure of social functioning
	Cognition and Attitudes	GRCS	Measure of gambling-related cognition
		GESS	Measure of gambling-related self-stigma
		GPSS	Measure of gambling-related perceived stigma
		GASS	Measure of self-efficacy

		PGSI *	Measure of gambling severity
Target	Behaviour Change	Goal Setting	Weekly measure of treatment goal
		Craving	Daily measure of urges to gamble
		Action	Daily measure of gambling behaviour
Process	Participation	Attendance*	Weekly attendance at the programme
	Process Measures	Group SRS	Measure of group and facilitator dynamics
		Change Interview	Participant's experience and attributions of change

* These measures were routinely administered by the service

2.5.1 Standard Measures

The National Gambling Service had routine clinical outcome measures that all service users completed at entry to the service and weekly throughout the treatment programme, and at 3, 6 and 12 months after the treatment ended. These standardised questionnaires measure outcomes related to gambling behaviour change, distress and symptom interference. This data was utilised to aid understanding of recovery. This information was used to assess pre-post changes and when considering the impact of specific sessions.

The standard outcome measures are as follows:

Problem Gambling Severity Index (PGSI; Holtgraves, 2008). Is a commonly used screening tool that measures gambling behaviours. It is theoretically derived and has considerable overlap with the DSM criteria for Gambling Addiction. Participants rate the presence and severity of symptoms of gambling addiction. Participants can score a maximum of 27, where a score of 0 indicates no problem gambling, 1-2 indicates low level problem gambling with no negative consequences, 3-7 indicates moderate levels of problem gambling with some negative consequences, and a score greater than 8 indicates problem gambling with negative consequences and a possible loss of control. The reliable change index criterion for

subscales on this measure is 7 and the clinically significant change criterion is 7 (see Appendix E for calculations).

Clinical Outcomes in Routine Evaluation 10 (CORE-10; Barkham et al., 2012). Is a short measure of psychological distress that is suitable for tracking progress during treatment. Scores of 10 or below are subclinical, scores between 11 and 14 indicate mild psychological distress, scores between 15 and 19 indicate moderate psychological distress, scores between 20 and 24 indicate moderate to severe psychological distress and scores greater than 25 indicate severe psychological distress. The reliable change index criterion for this measure is 6 and the clinically significant change criterion is 11 (see Appendix E for published figures).

Patient Health Questionnaire (PHQ-9; Kroenke et al., 2001) is a self-administered version of the PRIME-MD diagnostic instrument for common mental disorders. The PHQ-9 is the depression module, which scores each of the 9 DSM-IV criteria as "0" (not at all) to "3" (nearly every day). The reliable change index criterion for this measure is 6 and the clinically significant change criterion is 10 (see Appendix E for published figures).

General Anxiety Disorder Scale (GAD-7, Spitzer et al., 2006) is a brief measure of generalised anxiety that is closely linked to the DSM criteria for generalised anxiety disorder. A 13-item questionnaire asks patients how often, during the last 2 weeks, they are bothered by each symptom from "0" (not at all) to "3" (nearly every day). The reliable change index criterion for this measure is 4 and the clinically significant change criterion is 8 (see Appendix E for published figures).

Work and Social Adjustment Scale (WSAS, Mundt et al., 2002) is a self-report scale of functional impairment attributable to an identified problem. The respondents will be asked to rate their level of impairment in relation to their gambling. Scores less than 10 indicate low impairment, scores between 10 and 19 indicate moderate impairment and scores

greater than 20 indicate severe impairment. The reliable change index criterion for this measure is 8 and the clinically significant change criterion is 9 (see Appendix E for pubished figures).

In addition to the routine service measures, there are four further standard measures administered as part of the study:

The Gambling Related Cognition Scale (Raylu & Oei, 2003) is a 23-item measure of gambling-related cognitions. The measure has five sub-scales including perceived inability to stop gambling (GRCS-IS); interpretative bias (GRCS-IB); illusion of control (GRCS-IC); gambling-related expectancies (GRCS-GE); and predictive control (GRCS-PC). Inability to stop gambling relates to perceived helplessness and a self-fulfilling prophecy. Interpretive bias relates to reframing outcomes to encourage further play, including cognitions that attribute wins to internal factors, such as skill, and losses to external factors such as probability. Illusion of control refers to superstitious beliefs such as rituals that improve the likelihood of winning outcomes. Gambling-related expectancies includes anticipatory beliefs about the positive consequences of gambling. Predictive control involves the perception that the gambler can make accurate predictions based upon previous patterns or experiences. Respondents are asked to indicate the extent to which they agree with example cognitions using a 7-point Likert scale where 1 = strongly disagree; 2 = moderately disagree; 3 = mildly disagree; 4 = neither agree or disagree; 5 = mildly agree; 6 = moderately agree; 7 = strongly agree. The reliable change index criteria for subscales on this measure are; GCRS Total = 16.36; GCRS-IC = 4.82; GCRS-GE = 5.87; GCRS-PC = 9.08; GCRS-IS = 6.78; GCRS-IB; 4.9 (see Appendix E for calculations).

Gambling Perceived Stigma Scale (Donaldson et al., 2015) is a 36-item measure of stigma of how gamblers are perceived by others. Items include "Most people think that gamblers…" statements that measure the gambler's perception of stigmatised views made by

others. Respondents are asked to rate these statements on a 4-point Likert scale where 1 = strongly disagree; 2 = somewhat disagree; 3 = somewhat agree; 4 = strongly agree.

The measure consists of two subscales of Ostracism and Contempt. The ostracism subscale is concerned with the view that others would avoid and distrust a gambler. The contempt subscale relates to the view that others would make negative judgement of the personal or psychological deficits of a gambler. High scores on this measure indicate a greater perception of stigmatised views towards gamblers. The reliable change index criteria for subscales on this measure are Ostracism = 4.10 and Contempt = 4.61 (see Appendix E for calculations).

Gambling Experienced Stigma Scale (Donaldson et al., 2015) is an 18-item measure of self-stigma in relation to one's own gambling. Respondents are asked to rate these statements on a 4-point Likert scale where 1 = strongly disagree; 2 = somewhat disagree; 3 = somewhat agree; 4 = strongly agree. The GESS is a unidimensional scale where a higher total score indicates greater endorsement of stigmatised views towards themselves. The reliable change index criterion for this measure is 7.92 (see Appendix E for calculation).

Gambling Abstinence Self-Efficacy Scale (Hodgins et al., 2004) is a 21-item measure of self-efficacy in relation to maintaining abstinence. The measure includes a list of situations that might cause a relapse into gambling behaviour. There are four subscales including winning/external situations; negative emotions; positive mood/testing/urges; and social factors. Respondents are asked to rate how confident they feel in abstaining in each situation on a scale of 0-5 where 0 = not at all confident, 2.5 = moderately confident and 5 = extremely confident. It was not possible to calculate RCI for this measure due to insufficient published data being available.

2.5.2 Target Measures

Target measures tend to be brief and taken frequently. To gather information about gambling behaviour day-to-day, a short, daily survey was created that asked participants to rate to what extent they were feeling the urge to gamble (on a scale of 1-10) and a yes/no response question that asked whether they had gambled within the past 24 hours.

A measure of progress in relation to individuals' goals was created in consultation with service user representatives who had previously attended the CBT programme. This measure was designed to be completed weekly. It intended to capture a) what goals service users have, b) how these goals might change over the duration of the programme, c) confidence in achieving those goals and d) how close to achieving those goals the participant is. Participants were asked, "In relation to your gambling, what do you want to achieve from the programme?". A prompt indicated that this goal could change from what was reported in previous weeks and that they may have already achieved it. It had been considered that a free text box could mean that responses to this question might be vague or include goals unrelated to gambling. However, alternatives such as using a drop-down box with goals commonly identified within the literature (e.g. abstinence, controlled gambling, reduced spending) would have hindered the research aims of trying to understand what is most important to individuals with gambling problems in their own recovery. Participants were also asked to rate how confident they felt in achieving their goal and how close they felt to achieving this goal on a scale from 0 = not at all, to 10 = completely confident / achieved.

2.5.3 Process Measures

These measures were designed to ascertain some of the variables that may contribute to any observable changes.

Attendance. This information was collected to understand to what extent participants had received the treatment as intended when interpreting outcomes. Given that the evidence indicates that there are high drop-out rates in gambling services, it was hoped that monitoring attendance would allow for a better understanding of levels of engagement.

Group Session Rating Scale (GSRS; Duncan & Miller, 2007) was adapted for use. The GSRS aims to assess key dimensions of effective group alliances, including cohesion between group members and therapeutic alliances between a group member and the facilitator(s). The original scale asks the group member to rate whether they "felt understood, respected and accepted by the leader and the group". Based on consultation with previous service users, it seemed likely that participants in the study may have different relationships with peers vs the facilitators and so the measure was adapted to rate these separately (adaptations are highlighted in red on Figure 3.). The original scale consists of items that are presented as bipolar anchors on a ten centimetre line, e.g. "I felt understood, respected and accepted by the leader and the group" or "I did not feel understood, respected and accepted by the leader and the group". The form is intended to be completed in a pen and paper format where participants would mark their response along the continuum. In order to make the measure compatible for completion on a digital survey, the measure was adapted into a numeric scale where participants were asked to rate to what extent they endorsed the statement on a scale of 0-10 (See Figure 3.).

Figure 3

Group Session Rating Scale (Adapted)

	Completely Disagree										Completely Agree
I felt understood, respected and accepted by the facilitators	0 1 2 3 4 5 6 7 8 9 10										
I felt understood, respected and accepted by the group	0 1 2 3 4 5 6 7 8 9 10										
We worked on and talked about things that were relevant to me	0 1 2 3 4 5 6 7 8 9 10										
The facilitators approach is a good fit for me	0 1 2 3 4 5 6 7 8 9 10										
Overall, today's group was right for me, I felt like a part of the group	0 1 2 3 4 5 6 7 8 9 10										

Change Interview (Elliott et al., 2001). To further ascertain the process of behaviour change an interview was conducted at the end of the treatment programme. The first half of this followed the interview schedule outlined in the Change Interview (Elliot et al., 2001; see appendix C12). This captured participants' experience of their treatment, the changes they observed and any feedback they had. This interview also provided opportunity to identify or rule out any contextual or nontherapy processes that may explain client change. In the second half of the interview, participants were shown visual graphs of their questionnaire data and asked to comment on changes in scores.

2.6 Procedure

The Northern Gambling Service routinely administer their treatment outcome measures (PGSI, WSAS, CORE-10, PHQ-9 and GAD-7) using Smart Surveys. These are sent to service users via email to be completed after the referral is accepted. These are completed again before service users attend their first assessment appointment, after treatment ends, and again at 3 months after treatment ended. The PGSI and CORE-10 are also administered weekly on the day before the group CBT session, except in the final group session, where all measures are administered at the end. As part of this study, with participants' consent, the service agreed to share this data.

The remaining measures administered as part of the study were completed at various stages of the baseline, treatment and follow-up phase. The baseline period length varied across all participants due to the unpredictable timescales between their assessment and starting a CBT group. The NGS commences a CBT group once per month and so the baseline length could vary between 1 day and 4 weeks. The treatment phase was 9 weeks for all participants and the follow-up phase was a minimum of 4 weeks for all participants. See Table 3 for the measurement schedule for all standard, target and process measures.

Measures for this study were also administered on Smart Surveys disseminated via email. Participants were asked to complete the measures independently. Emails were sent by the researcher and were clearly marked as being for the purposes of research at the University of Leeds, to avoid confusion with existing service outcome measures. The content of these emails is included in Appendix D. Baseline measures were sent immediately after consent was obtained and follow-up measures were sent the week following their final CBT group. Daily measures were automatically sent at 17:00 every day and weekly measures were automatically sent on the day of the group at 19:00. Participants were not prompted for missing data on weekly measures. Participants were made aware in each daily email that if

they missed a day they should continue with the remaining daily measures as normal.

Participants were prompted with a reminder to complete daily measures if they did not complete them for seven days. The measurement schedule is detailed in Table 3.

Table 3

Measurement Schedule

	MEASURE	BASE-LINE	THERAPY 1	2	3	4	5	6	7	8	9	FOLLOW-UP Weekly up to 1 Mth	3Mth
Existing Service Measures	PGSI	▦	▦	▦	▦	▦	▦	▦	▦	▦	▦	▦	▦
	WSAS	▦										▦	▦
	CORE-10	▦	▦	▦	▦	▦	▦	▦	▦	▦	▦	▦	▦
	PHQ-9	▦										▦	▦
	GAD-7	▦										▦	▦
Measures of Cognition	GAMBLING COGNITION	▦									▦		▦
	EXPERIENCED STIGMA	▦									▦		▦
	PERCEIVED STIGMA	▦									▦		▦
	SELF-STIGMA	▦									▦		▦
Measures of Gambling	GAMBLING GOAL	▦	▦	▦	▦	▦	▦	▦	▦	▦	▦	▦	
	GAMBLING URGE	▦	▦	▦	▦	▦	▦	▦	▦	▦	▦	▦	
	GAMBLING BEHAVIOUR	▦	▦	▦	▦	▦	▦	▦	▦	▦	▦	▦	
Process Measures	GROUP SRS		▦	▦	▦	▦	▦	▦	▦	▦	▦		
	ATTENDANCE		▦	▦	▦	▦	▦	▦	▦	▦	▦		
	CHANGE INTERVIEW											▦	
KEY:	Standard (Pre/Post/Follow-up)	Target Weekly	Target Daily	Process									

2.7 Recruitment

Participants were recruited from service users who had been referred to the Northern Gambling Service group CBT programme during the recruitment period. The recruitment

relied on clinicians at the Northern Gambling Service who made the first approach to potential participants. To reduce the burden and ensure that access to potential participants was not unnecessarily hindered, the role of the clinicians was designed to be simple. The inclusion criteria were broad and included any individual who was due to commence the group CBT programme, and so clinicians did not need to assess suitability beyond this. Those considered eligible for the group were considered to have the necessary language and cognitive skills to provide informed consent and participate in the research. No participants were excluded on the basis of their presentation. Clinicians were provided with basic information about the project so that they could introduce this to service users. Service users who expressed interest in the study were contacted with further information about the project (see Appendix B for PIS and consent documents). See Figure 4 for details of the recruitment process.

Figure 4

Flow chart of recruitment process
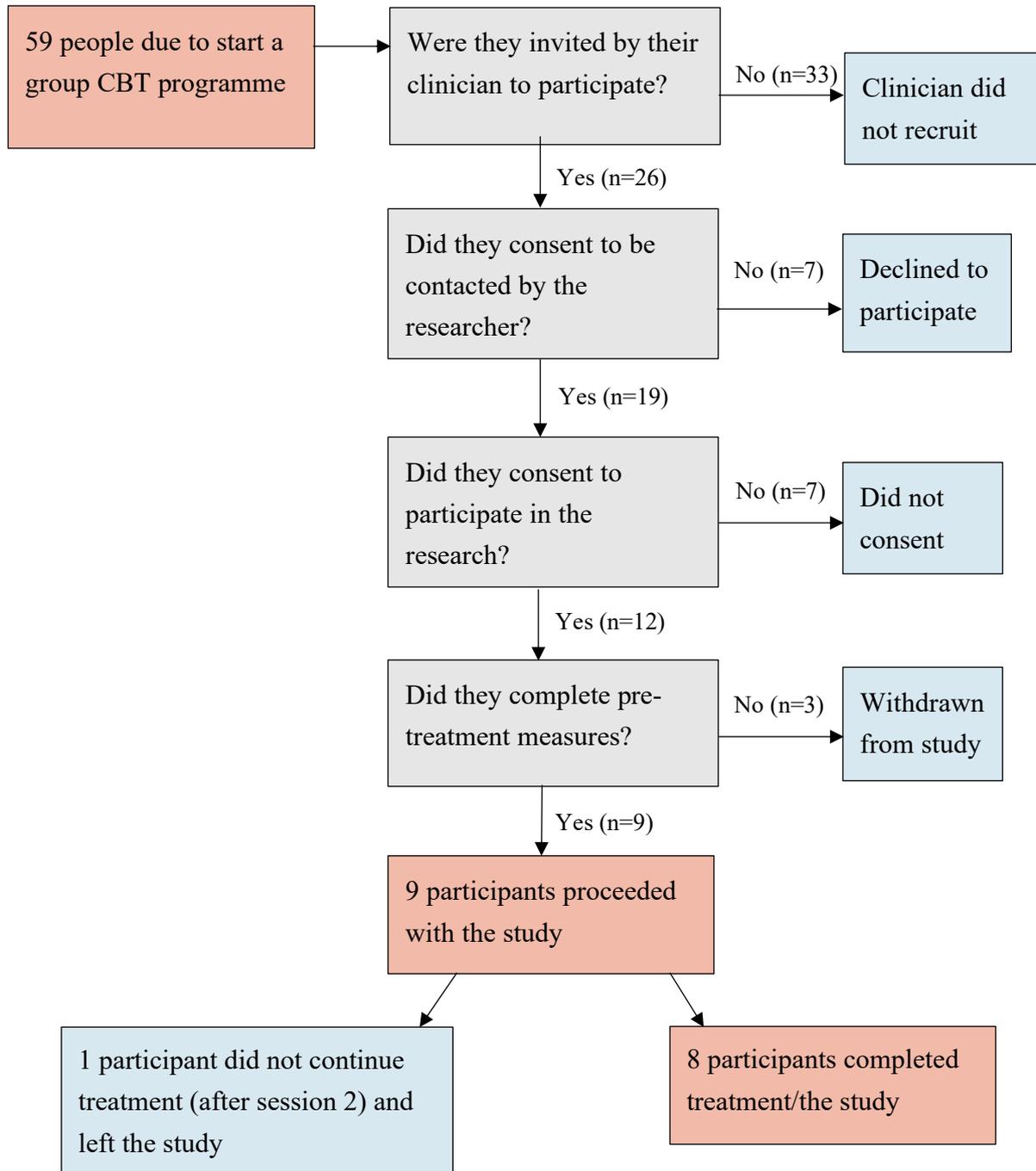
Table 4

Participant characteristics

ID	Gender	Age	Ethnicity	DSM Criteria	Pathway*	Gambling Type	Length of time gambling	Current Debts at Referral	Days Gambling at Referral (in the last 30 days)	Previous treatment	Self-exclusion in place^
KU	Male	39	White British	Severe (8-9)	2	Sports (online)	11 years	£1000	1	Yes (Northern Gambling Service)	Yes
NT	Male	58	White British	Severe (8-9)	2	Horses/sports (premises)	40 years	£12000	2	Yes (GamCare)	Yes
KK	Female	40	Black British	Severe (9)	2	Gaming machines (online and premises)	15 years	£20000	15	Yes (GamCare)	Yes
DH	Female	42	White British	Mild (4)	1	Gaming machines (premises)	28 years	£0	5	No	No
DD	Male	40	White British	Severe (8)	1	Sports (online and premises)	14 years	£3900	0	Yes (GamCare)	Partial
KT	Male	32	White British	Severe (9)	2	Sports (premises) Online slots	20 years	£11000	20	Yes (GamCare)	Partial
ID	Male	59	White British	Moderate (7)	2	Fruit machines (premises)	40 years	£0	5	Yes (Northern Gambling Service)	Partial
NL	Male	45	White British	Severe (8)	2	Gaming machines (online and premises) Scratchcards	25 years	£0	5	No	Yes

* Rated by clinicians at assessment using Blacyznski's Pathways model (2002); Pathway 1 = Behaviourally Conditioned, Pathway 2 = Emotionally Vulnerable
^ Self-exclusion refers to self-imposed restrictions on access to gambling including barring from betting premises, online blocks on gambling websites, restrictions on bank accounts

2.8 Participants

Over the period of recruitment to the study, the NGS ran four CBT groups. The participants were recruited from these as follows: one participant from Group 1, two participants from Group 2, three participants from Group 3 and two participants from Group 4.

Table 4 summarises the data collected for each participant.

2.9 Ethical Approval

NHS ethical approval was sought. London Riverside Research Ethics Committee approved this study (REF: 22/PR/0962).

Several ethical issues were considered:

Informed consent Participants were provided with an information sheet detailing full details of the study before providing consent via an online form. All participants were given the opportunity to verbally discuss the research with the researcher prior to providing consent.

Maintaining confidentiality The research was conducted in accordance with the Data Protection Act (1998). Participants were allocated a unique identifying code to use when completing questionnaires so that these could be collected and stored confidentially. All details were stored on secure services and all emails were sent via a secure network.

Ensuring treatment was not disrupted Participants were made aware that they could end their involvement in the study at any time and this would not impact their treatment. Daily and weekly questionnaires had the potential to be burdensome for participants and so measures were designed to be brief and efficient. Service user consultation enabled us to prioritise the most beneficial treatment/research outcomes from the service user perspective.

Incentives Incentives for participation were not included in this study due to consultation with previous service users indicating that rewards or payment is a potential trigger for the client group and they would rather have the satisfaction of giving something back to the service.

2.10 Analysis

2.10.1 Analysis of Standard Measures

Standard pre and post intervention measures were analysed using the Reliable Change Index (RCI; Jacobson & Truax, 1991) and Clinically Significant Criteria (CSC). The RCI assesses whether the change in score is statistically significantly greater than a difference that might have occurred due to random measurement error alone. A reliable change criterion is calculated using the reliability and standard deviations of the measure. The RCI for all standardised outcome measures was calculated using published data. The CSC is a practical guide of whether the change observed is clinically important. This is based upon each measure's published clinical cut-offs which indicate severity of symptoms (i.e. clinical or subclinical). These cut offs were used to assess whether any changes were a meaningful improvement or deterioration according to clinical severity. RCI and CSC scores for each standard measure are included in Appendix E.

2.10.2 Analysis of Target Measures

For weekly and daily target measures, change was assessed through visual analysis. Data was plotted on x-y plots for all measures. The phases of the study: baseline treatment and follow-up are indicated by the markers on the figures. The visual displays have been developed in accordance with guidance for presentation from Morley (2018), and all are included in the results section for transparency. Visual analysis focussed on observing any

trends and changes over time, particularly noting whether changes occurred following the introduction of the CBT group and after the CBT group finished. Visual displays for target measures are presented alongside each other for each participant in order to compare any similarities or difference in trends for gambling urges, behaviours and gambling goals.

2.10.3 Analysis of Process Measures

Qualitative data from the semi-structured change interview is presented alongside quantitative data to add context to observed changes. Data from these interviews was not rich enough to conduct a thematic analysis. Therefore, qualitative data from change interviews was analysed by listening to interview recordings for each participant before noting salient points relevant to the following questions:

- What changes were observed?

- What did the participant attribute change to?

- What did the participant find useful/unhelpful in the CBT group?

- What explanations did participants give in response to seeing their outcomes data?

3   Results

The analysis of data will now be presented. First, a summary of participants will be presented to contextualise the sample. Next, in order to establish what recovery from disordered gambling looks like and how effective the CBT programme is, an analysis of gambling, wellbeing and process measures and change interviews will be detailed separately for each participant. This is followed by group level analysis of participant goals and reported changes from the change interview.

3.1 Overview of participants

It is of note that the research sample appeared not to be representative of the population that usually attends for treatment at the NGS, in that there was a lower rate of dropout for the research sample in comparison to the group members who had not enrolled in the study.

Figure 5

Proportion of group referrals, starters and completers for research participants and the rest of the group members
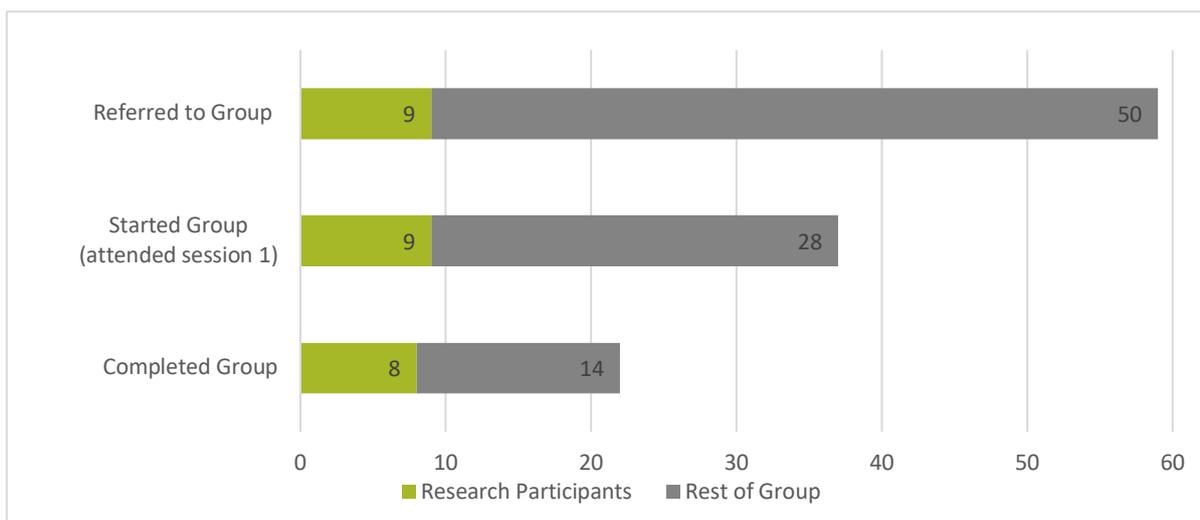
Figure 5 shows the proportion of research participants and the rest of the group members at referral, commencement of group treatment and at the end of the group treatment. Of the individuals who were referred to one of the four group treatment programmes but had not signed up to the study (n=49), 36.2% did not attend the first session and dropped out of their group. 100% of those who signed up for the research (n=9) attended their first treatment session. Of the people who started their treatment but did not enrol in the study (n=28), 41% dropped out of treatment prematurely. Of those who signed up to the research, only one participant dropped out of treatment (11%).

Within the participant's self-completion form (administered by the service at referral) service users were also asked to complete questions about their motivation to change in relation to gambling. They were asked how important it was for them to change, how ready they felt to change, how much better their life would be if they changed and how confident they felt in being able to change. These items were rated on a scale of 1-10. These scores are included in Table 5. Overall, participants all scored maximum for ratings of the importance of stopping gambling and how much better their lives would be if they stopped gambling. Almost all scored maximum for readiness to change. There was greater fluctuation in ratings of how confident participants felt in changing their behaviour, with scores between 6 and 10.

Table 5

Motivation to change questions

Participant	How important it is to change	How ready you feel to change	How much better would life be if you changed	How confident do you feel to change
KU	10	10	10	10
NT	10	10	10	7
KK	10	10	10	6
DH	10	10	10	10
DD	10	10	10	8
KT	10	8	10	10
JE	10	10	10	10
NL	10	10	10	6

3.3.1 Participant Treatment Goals

As part of weekly measures, participants were asked to define their own goal for treatment. Participants were consistent in their goals throughout all treatment phases, except for ID where his goal fluctuated between complete abstinence and specifically not gambling on fruit machines. All participants described abstinence as their goal for treatment. Participants goals are detailed in Table 6.

Table 6

Participants goals for treatment

Participant	Baseline goal	Treatment goal	End of treatment goal
KU	Gambling free	Gambling free	Gambling free
NT	Abstinence	Abstinence	Abstinence
KK	Quit gambling	Quit gambling	Quit gambling
DD	Abstinence	Abstinence	Abstinence
DH	To stop gambling completely	To stop gambling completely	To stop gambling completely
KT	To quit gambling completely/to never gamble again	To quit gambling completely/to never gamble again	To quit gambling completely/to never gamble again
JE	To stop gambling/ to stop going on fruit machines	To stop gambling/ to stop going on fruit machines	To stop gambling
NL	To be free from gambling and the thoughts associated with it	To be free from gambling and the thoughts associated with it	To be free from gambling and the thoughts associated with it

3.2 Analysis of Case Series Data

Data for each participant will be presented separately. Standardised and target

measures in the domains of gambling behaviour, gambling-related cognitions and wellbeing

are presented. Process measures are presented both within the description of the participant,

where engagement is considered, and at the end of each section where group process and a

summary of the change interview is detailed. The outcomes data available for each

participant is detailed in Table 7. Due to time limitations on the project, at the time of writing

only three participants were eligible to complete 3-month follow-up measures and there were

low response rates (only KU completed measures administered by the NGS but not the

additional research measures). It should also be noted that due to relatively short timeframes

between participants' assessments and them commencing a CBT group, most participants had

shorter baseline phases than expected with most of them having less than two weeks of

baseline data (n=8).

Table 7

Phases completed

Participant	Baseline Length (days)	Treatment Length (weeks)	Follow Up Length (weeks)	Post Measures Completed	Change Interview Completed	3 month follow-up Completed
KU	8	9	4	Yes	Yes	Partial
NT	3	9	5	Yes	Yes	No
KK	13	9	5	Yes	Yes	No
DH	9	9	4	Yes	Yes	N/A
DD	8	9	4	Yes	Yes	N/A
KT	1	9	2	Yes	No	N/A
JE	35	9	4	Yes	Yes	N/A
NL	13	9	4	Yes	No	N/A

3.2.1 Participant KU

KU was a man who gambled on online sports betting. Diagnostic categorisation at the

NGS classified him as an emotionally vulnerable gambler (Pathway 2). He had been

gambling 11 years and had one year before the referral participated in individual cognitive behavioural therapy at the NGS, which was considered to have been successful at the time. At referral he had been mostly abstinent from gambling for three months and had self-exclusions in place.

Engagement with treatment/research

KU attended for eight out of nine sessions. He missed session seven of the CBT group which covered "challenging gambling thinking". He provided data for all standardised outcome measures and completed the follow-up interview. He provided data for 93% of weekly measures and 74% of daily measures.

Gambling Behaviour

Standardised measures

Between referral and post-group, KU's gambling severity as measured by the PGSI reliably improved. However, scores indicate greater improvement from referral to pre-group than the change observed from referral to follow-up. Therefore, despite an overall improvement during his time within the NGS, his score from pre-treatment to post-treatment appeared to have deteriorated. Further improvements in gambling severity were observed from post-group to follow-up.

Table 8.

KU PGSI scores

	Time point 1	Time point 2	RCI	CSC
Overall impact: referral to follow up	24	5	Reliable improvement	Clinically significant improvement
Early impact: referral to pre-group	24	1	Reliable improvement	Clinically significant improvement
CBT group impact: pre-group to post-group	1	7	No change	No change
Maintenance: post-group to follow-up	7	5	No change	No change

Target measures

  KU initially reported that his goal was for gambling abstinence and this remained

consistent throughout treatment and follow-up. Confidence in achieving his goal and his

closeness to achieving this goal were relatively high at baseline and this continued throughout

treatment. KU did not indicate any incidences of gambling throughout baseline, treatment,

and follow-up. His urges were most frequently scored below two with some elevated scores

that reached five, and a peak of ten during the follow-up period. There was no trend to this

pattern and no observable increase or decrease over time. In terms of episodes of gambling

(n=1), episodes prior to referral were low and this was maintained in the last 30 days of the

study (n=0).

Figure 6

KU Goal (Abstinence) - Weekly Ratings
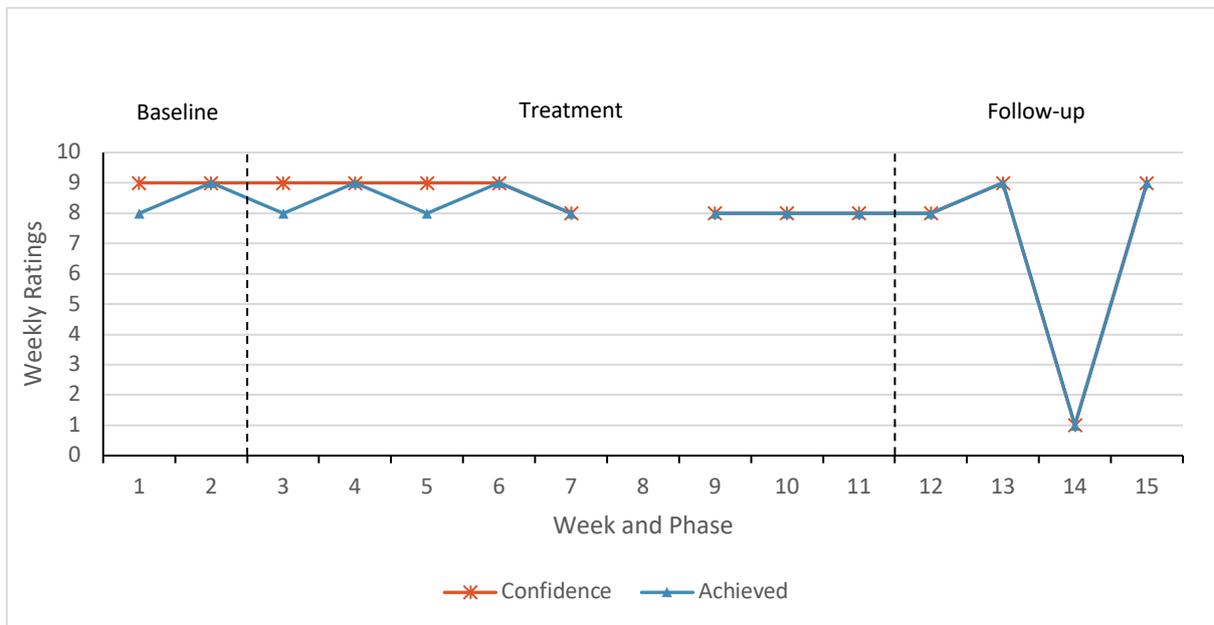
Figure 7

KU Gambling Urges and Behaviour - Daily Ratings
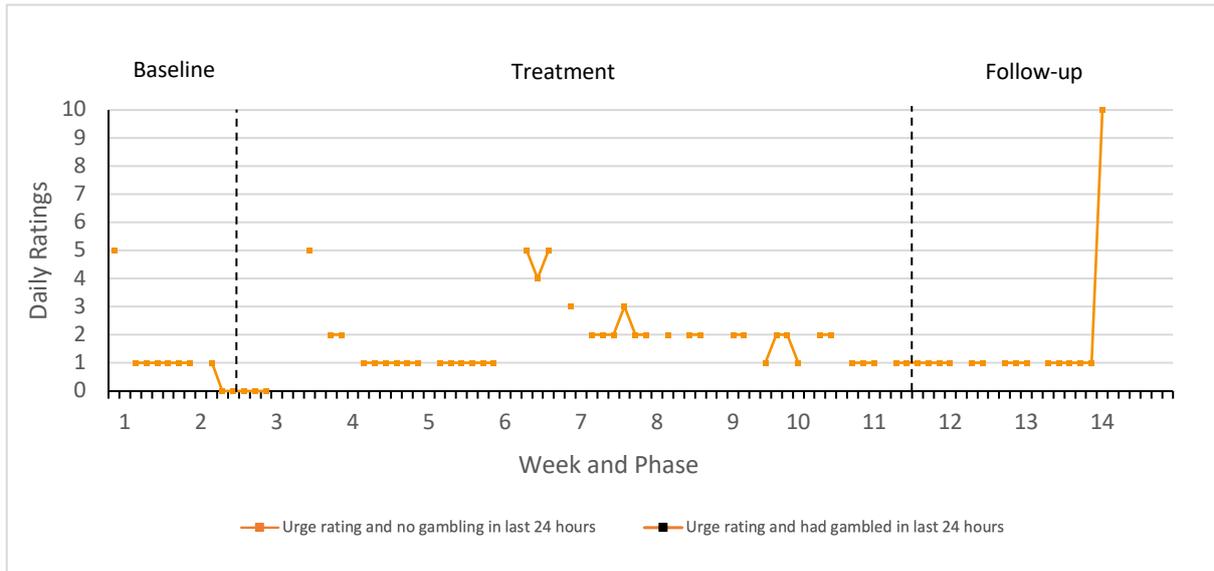
Table 9

KU Days gambling at referral and end of study

	30 days before referral	Last 30 days of study
Days gambling	1	0

Gambling Cognitions

KU's scores deteriorated across most measures of gambling cognitions. His scores for gambling-related cognitions deteriorated which indicated that he had an increase in cognitions that facilitate gambling behaviour. Notable increases were observed for those cognitions involving an illusion of control and predictive control. KU had mixed results on the GPSS which indicated an improvement in his perception of contempt from others but a deterioration in his perception of ostracism from others. He had a significant deterioration in his GESS score indicating a deterioration in self-stigma. KU's scores on the GASS deteriorated, indicating a reduction in confidence in maintaining abstinence across a variety of high-risk situations for gambling.

Table 10.

KU Gambling Related Cognitions Scores

Measure	Subscale	Range (min, max)	Pre	Post	Outcome
Gambling Related Cognitions Scale (GRCS)	Total	(23, 161)	49	104	Reliable Deterioration
	Gambling Expectancies	(4, 28)	11	11	No change
	Illusion of Control	(4, 28)	7	16	Reliable Deterioration
	Predictive Control	(6, 42)	9	29	Reliable Deterioration
	Inability to Stop Gambling	(5, 35)	15	23	Reliable Deterioration
	Interpretive Bias	(4, 28)	7	25	Reliable Deterioration
Gambling Perceived Stigma Scale (GPSS)	Contempt	(7, 28)	23	19	Improvement
	Ostracism	(6, 24)	9	17	Reliable Deterioration
Gambling Experienced Self-Stigma Scale (GESS)	Total	(13, 52)	20	40	Reliable Deterioration
Gambling Abstinence Self-Efficacy Scale (GASS)*	Total	(0, 5)	3.0	2.76	Deterioration
	Winning/External Situations	(0, 5)	4	3	Deterioration
	Negative Emotions	(0, 5)	2.4	2.8	No change
	Positive mood/testing/urges	(0, 5)	3	2	Deterioration
	Social Factors	(0, 5)	3	2.6	Deterioration

* Unable to calculate reliability scores for the GASS

Wellbeing

KU had reliable improvements in his wellbeing as measured by the CORE-10, PHQ-9, GAD-7 and WSAS. Following treatment, his overall wellbeing was within the non-clinical range, indicating levels of distress in line with that of the general population. His depression score had reduced from severe depressive symptoms to mild depressive symptoms. His anxiety score had reduced from severe anxiety to mild anxiety. His score for work and social functioning had decreased from severe to moderate. All improvements were maintained at follow-up, except for a small but unreliable deterioration in work and social functioning.

Table 11. KU Wellbeing Scores

Wellbeing Measure	Referral	Pre CBT Group	Post CBT Group	3 Month Follow-up	RCI	CSC
CORE-10	28	9	11	11	Reliable Improvement	Clinically significant
PHQ-9	27		5	5	Reliable Improvement	Clinically significant
GAD-7	21		8	7	Reliable Improvement	Clinically significant
WSAS	33		14	18	Reliable Improvement	Not clinically significant

Note: Pre CBT Group data is only available for the CORE-10

Group Process

KU reported scores of seven and above for all items across all treatment sessions.

These ratings are all relatively high.

Figure 8

KU Group Session Rating Scale
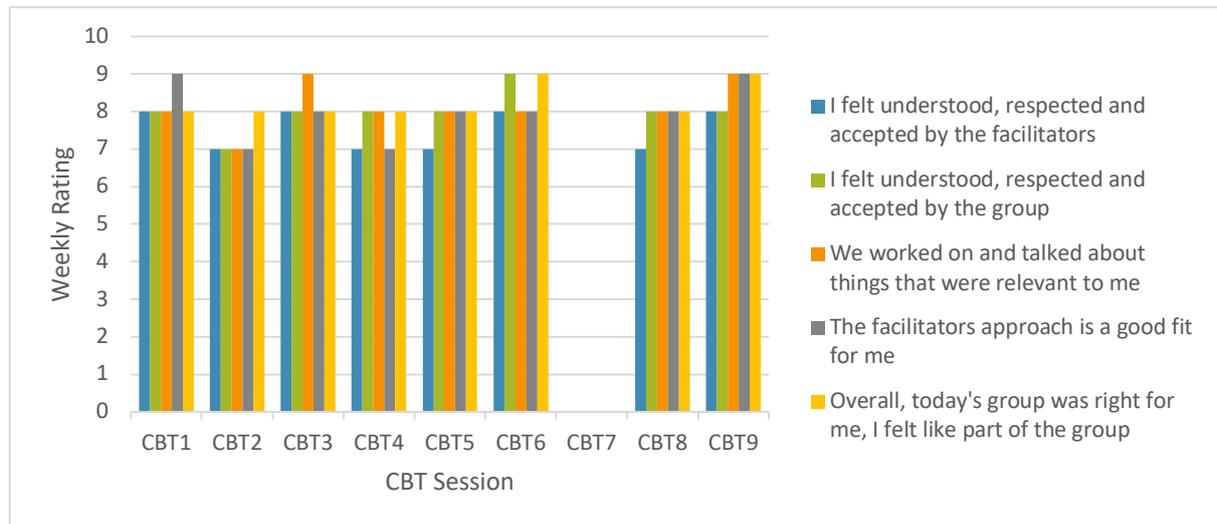
Change Interview

KU could not identify any changes that occurred since commencing the CBT group.

He explained that he had become abstinent prior to the referral to the NGS, which was

prompted by significant consequences of his gambling, including losing access to his

children. He regained contact with them immediately prior to the CBT group starting and this motivated him to attend the CBT group and remain abstinent throughout. KU also explained that he had begun taking antidepressant medication upon referral to the NGS, which had helped to reduce his mood swings. He explained that he saw himself "becoming a nice person again". KU acknowledged that when he previously attended for individual therapy, he was not abstinent and so could not engage with the therapy as well as he had this time. However, he also stated that as he had previously covered the content, he did not fully engage with homework tasks as he had previously completed some of them already.

KU said that he particularly valued hearing from peers who had similar experiences to him and said that it was easier to talk to peers and professionals instead of discussing his difficulties with his family. KU said that his urges never really go away but he must "be strong" and "think about something else". KU said that he needed to stay involved with the group and any other opportunities to engage with the service, such as the recovery group, because he could "easily slip back into it". KU commented that there were people in his group who "weren't serious" about making changes to their gambling behaviour which had a negative impact on his experience of the group, which affected his GSRS ratings.

Participant Summary

KU was abstinent upon attending the NGS and his goal was to maintain abstinence. There were marked improvements in gambling severity as rated by the PGSI from his referral to the end of the CBT group, which were well maintained at 3 month follow-up, however most of the improvement occurred prior to the group. There were no observable behavioural changes due to KU having low urges at baseline and no incidences of gambling behaviour throughout all phases. Despite maintaining abstinence, there appeared to be an increase in problematic cognitions that facilitate gambling, an increase in his perception of stigma both

from others and towards himself, and a decrease in his confidence in maintaining abstinence when presented with a wide range of high-risk situations. In contrast, there was a reliable improvement in his wellbeing, including symptoms of anxiety and depression, and a reduced impact of gambling on his work and social functioning, which were maintained at 3-month follow-up. KU reported that he had not observed any changes directly as a result of attending the CBT group. Instead, he identified external factors as having a greater impact upon his recovery. He reported that full recovery was not possible, as he expects that he will always have urges and that relapses could happen in the future.

3.2.2 Participant NT

Participant NT is a man who had been gambling on horses and sports in bookmakers for 40 years and had current debts of over £10,000. He was classified by the NGS as an emotionally vulnerable gambler (Pathway 2). He had been abstinent for five months prior to treatment. He had attended therapy via GamCare prior to referral to NGS. He had self-exclusion strategies in place using Gamstop and MOSES.

Engagement with treatment/research

NT attended for eight out of nine sessions. He did not attend for session eight of the CBT group, which covered "understanding of a lapse". He provided data for all standardised outcome measures and completed the follow-up interview. He provided data for 87.5% of weekly measures and 93% of daily measures.

Gambling Behaviour

Standard Measures

NT's gambling severity as measured by the PGSI had reliably improved before

commencing the CBT group. There was a reduction from his scores at referral to those at the

end of treatment which indicated that improvements made before treatment had been

maintained. In terms of clinical significance, his score had reduced to a level considered to be

indicative of a gambler who experiences a low level of problems with few or no identified

negative consequences.

Table 12.

NT PGSI Scores

	Time point 1	Time point 2	RCI	CSC
Overall impact: Referral to post-group	20	2	Reliable Improvement	Clinically Significant Improvement
Early impact: Referral to pre-group	20	1	Reliable Improvement	Clinically Significant Improvement
CBT impact: pre-group to post-group	1	2	No change	No change

Target Measures

NT initially reported that his goal was gambling abstinence and this remained

consistent throughout treatment and follow-up. His confidence in achieving this goal

remained high throughout treatment, with ratings higher than eight. He rated himself as close

to achieving this goal throughout treatment, with ratings higher than seven. There were no

observable trends on this measure. NT was abstinent throughout treatment. Prior to referral

he had 2 episodes of gambling during a thirty day period, but did not gamble throughout all

phases. He reported no urges on most days throughout treatment, except for an urge rating of

ten around the time of the eighth group CBT session. He had some low-level urges at the

beginning of the follow-up period but remained abstinent throughout a five-week follow-up.

Figure 9

NT Goal (Abstinence) – Weekly Ratings
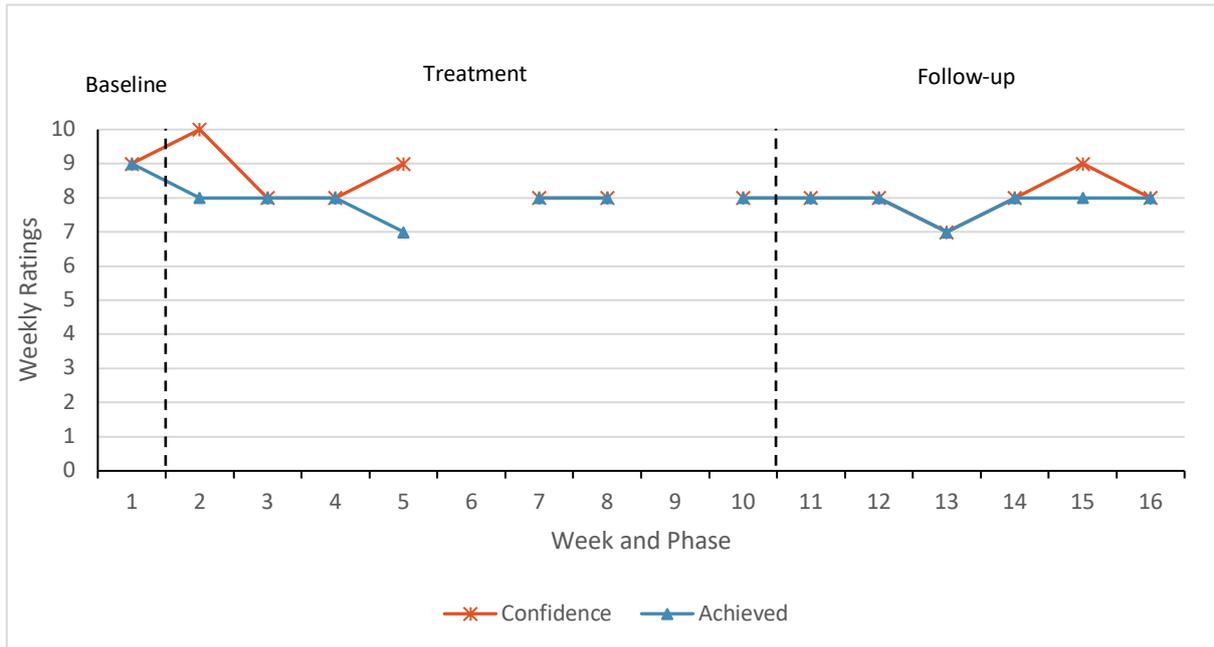
Figure 10

NT Gambling Urges and Behaviour - Daily Ratings
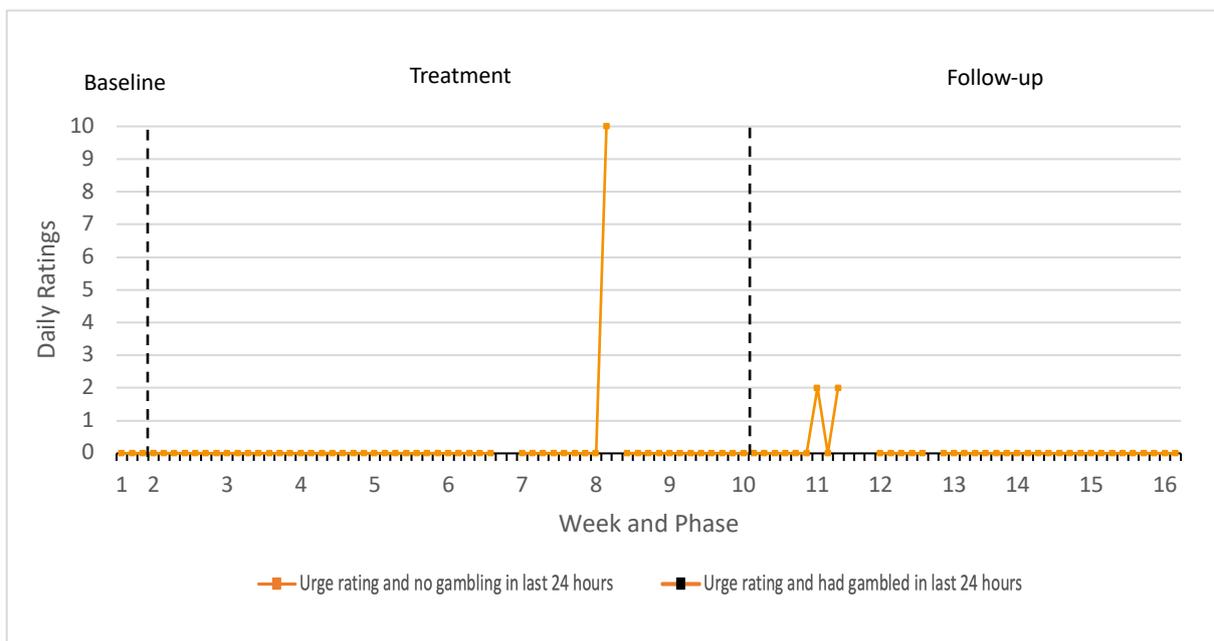
Table 13

NT Days gambling at referral and end of study

	30 days before referral	Last 30 days of study
Days gambling	2	0

Gambling Cognitions

NT scored minimally for gambling-related cognitions prior to treatment and there was no change following treatment. In terms of stigma, NT improved in stigmatised views towards himself. There was a deterioration in stigma perceived from others overall. However, there was an improvement on the contempt subscale, indicating a change in his perception of negative judgements from others, although this was not a reliable change. NT scored the maximum score for abstinence self-efficacy at baseline, indicating a high level of confidence in maintaining abstinence across all high-risk situations for gambling. This deteriorated after treatment, with the most discernible changes in response to situations that included negative emotional states.

Table 14:

NT Gambling Related Cognitions Scores

Measure	Subscale	Range (Min, Max)	Pre	Post	Outcome
Gambling Related Cognitions Scale (GRCS)	Total	(23, 161)	23	23	No change
	Gambling Expectancies	(4, 28)	4	4	No change
	Illusion of Control	(4, 28)	4	4	No change
	Predictive Control	(6, 42)	6	6	No change
	Inability to Stop Gambling	(5, 35)	5	5	No change
	Interpretive Bias	(4, 28)	4	4	No change
Gambling Perceived Stigma Scale (GPSS)	Contempt	(7, 28)	11	9	Improvement
	Ostracism	(6, 24)	8	11	Deterioration
Gambling Experienced Stigma Scale (GESS)	Total	(13, 52)	42	32	Reliable Improvement
	Total	(0, 5)	5	3.57	Deterioration
	Winning/External Situations	(0, 5)	5	4.5	Deterioration

Gambling	Negative Emotions	(0, 5)	5	2	Deterioration
Abstinence Self	Positive mood/testing/urges	(0, 5)	5	5	No change
Efficacy Scale	Social Factors	(0, 5)	5	5	No change
(GASS)					

* Unable to calculate reliability scores for the GASS

Wellbeing

NT's overall wellbeing had reliably improved following treatment, reducing from mild-to-severe psychological distress to being low level distress. Symptoms of depression and were moderate at referral and this did not change following treatment. Symptoms of anxiety were mild at referral and this was maintained post-treatment. Social functioning was minimally impacted prior to treatment and this reduced to no impact following treatment, although this was not a reliable change.

Table 15:

NT Wellbeing Scores

Wellbeing measure	Referral	Pre CBT group	Post CBT group	RCI	CSC
CORE-10	22	7	9	Reliable improvement	Clinically significant
PHQ-9	7		7	No change	N/A
GAD-7	6		6	No change	N/A
WSAS	8		0	Improvement	Not clinically significant

Note: Pre-group data is only available for the CORE-10

Group Process

NT rated the group highly throughout each group CBT session.

Figure 11

NT Group Session Rating Scale Scores
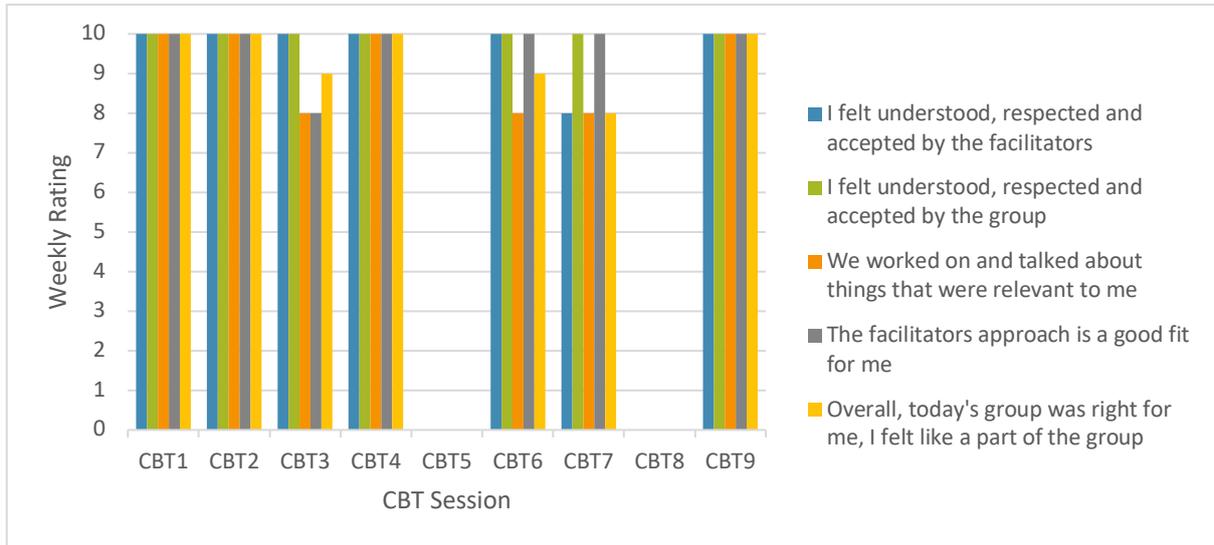
Change Interview

NT did not report any changes as a result of attending the CBT group. He explained that he had begun to make lifestyle changes five months before the group started. He said that a significant moment occurred where he thought if he did not stop gambling he would be heading towards "rock bottom". He initially accessed Gamcare and he was introduced to the MOSES self-exclusion scheme for bookmakers' premises. He also reconnected with his Church at this time. He has noticed significant changes in his finances and the freedom that this affords him. NT explained that he had attended a similar CBT group with the National Gambling Clinic in 2012 and so the content was a reiteration for him. He particularly valued revisiting the use of cue cards and rewards for non-gambling behaviour. He said that it is easy for gamblers to forget how to remain abstinent and so in his view, gamblers will always need ongoing support and to revisit learning materials.

NT explained that although his urge rating was consistently low, he had thoughts about gambling every day and he coped by thinking of something else. He recalled one occasion during treatment where he had a lapse and attempted to gamble but the MOSES scheme meant that he was denied access to the bookmakers shop. NT explained that he could never score a nine out of ten for achieving his goal of abstinence because "the minute you think you're cured, you're gonna gamble again". He said that the only time he could ever score a "10" would be "on his deathbed", as he could guarantee he would not be able to place a bet. At the time of the post-treatment interview, NT said that he had been struggling with anxiety and depression and he thought that he would need to address this in order to reduce his risk of relapse.

NT shared concerns that he thought it wasn't appropriate to have gamblers who had been abstinent for a while in the same group as gamblers who were experiencing lapses. He thought that this would discourage them from attending and increase their feelings of shame about lapses. He thought a better format would be one group for those still making changes and another for those who were further into recovery.

Participant Summary

NT was abstinent upon attending the Northern Gambling Clinic and his goal was to maintain abstinence. There were marked improvements in gambling severity as rated by the PGSI prior to attending the CBT group, however, no observable behavioural changes due to having low urges at baseline and no incidences of gambling behaviour throughout all phases. There was an increase in his confidence in maintaining abstinence when presented with a wide range of high-risk situations. Following treatment, NT appeared to have a more positive view of himself in relation to his status as a gambler. However, there appeared to be an increase in his expectation that others would isolate or reject him if they were aware of his

gambling. There was a reliable improvement in his overall wellbeing, but this did not include symptoms of anxiety and depression. NT reported that he had not observed any changes as a result of attending the CBT group. Instead, he identified external factors that he had begun to implement before treatment as having a greater impact upon his recovery. He reported that full recovery in the context of the research measures was not possible, as he expects that he will always have thoughts about gambling and that relapses could happen in the future.

3.2.3 Participant KK

KK was a woman who gambled on gaming machines. She was classified as an emotionally vulnerable gambler (Pathway 2). She had been gambling for 15 years and had debts of more than £20,000. She was not abstinent at the time of referral to the NGS but had self-exclusion methods in place by using Gamstop. She had previously attended treatment with GamCare.

Engagement with treatment/research

KK attended for eight of the nine sessions. She did not attend for session eight of the CBT group, which covered understanding of a lapse. KK provided data for all standardised outcome measures and completed the follow-up interview. She provided data for 70% of weekly measures with the majority of missing data being within the follow-up period. She completed 86% of daily measures.

Gambling Behaviour

Standard Measures

KK's gambling severity as measured by the PGSI showed a reliable improvement between referral and the end of the group. Clinically, KKs scores at referral and following

treatment remained in the highest interpretive category of the PGSI which indicated gambling with negative consequences and a possible loss of control. The greatest improvement was observed between referral to pre-group. At pre-group, KKs score was indicative of a gambler with a moderate level of problems leading to some negative consequences. This meant that although her score had improved during her time within the NGS, her score pre-group to post-group had deteriorated.

Table 16.

KK PGSI Scores

	Time point 1	Time point 2	RCI	CSC
Overall impact: Referral to post-group	33	17	Reliable improvement	Not clinically significant
Early impact: Referral to pre-group	33	7	Reliable improvement	Clinically significant improvement
CBT impact: Pre-group to post-group	7	17	Reliable deterioration	Clinically significant deterioration

Target Measures

KK's goal throughout treatment was to become abstinent. KK's confidence and perception of how close she was to achieving this goal fluctuated throughout baseline, treatment, and follow-up. As a result of this, and due to incomplete measures, it is not possible to observe any clear trends over time. However, from the data available, it appears that high scores in confidence and achievement at the beginning of treatment were not maintained during follow-up. Lower scores in confidence and goal achievement appear to be directly associated with an increased urge to gamble and episodes of gambling behaviour (see figure X). In terms of gambling episodes, improvements were observed as measures by frequency in the 30 days before referral (n=15) and in the last 30 days of the study (n=5). Urges to gamble also fluctuated throughout baseline, treatment, and follow-up. There was a total of nine days of reported gambling throughout the 114 days of daily measures. It is

notable that episodes of gambling behaviour occurred during all three phases but the majority

of these episodes (n=5) occurred in the follow-up period.

Figure 12.

KK Goal (Abstinence) – Weekly Ratings
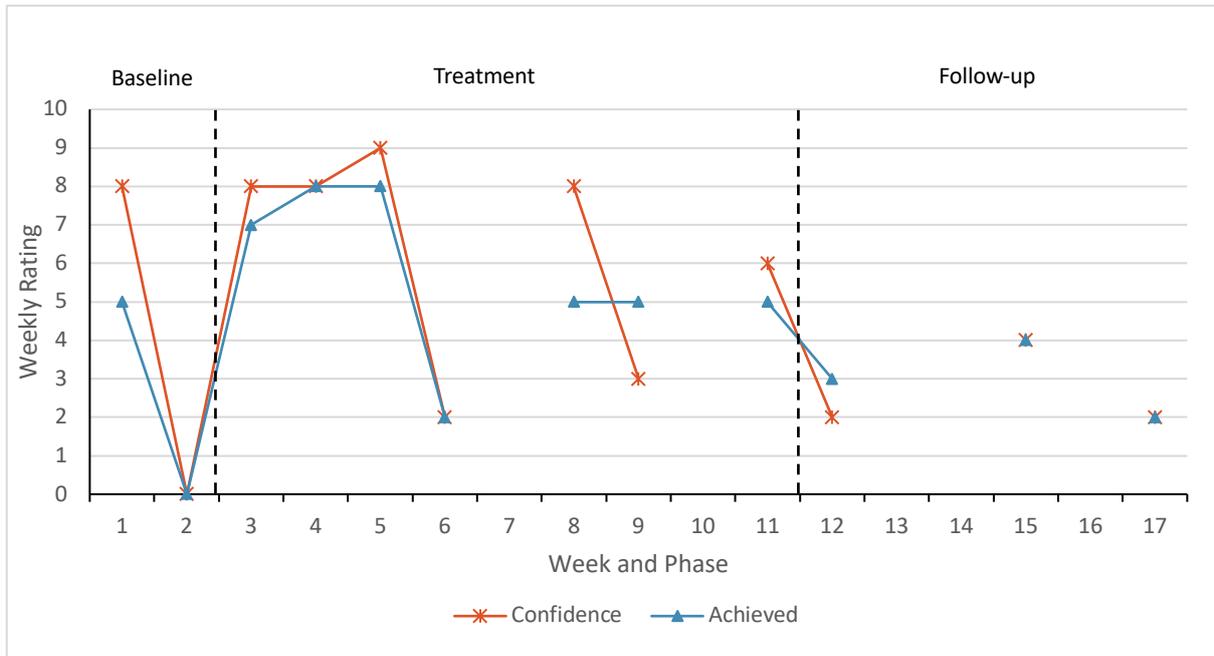
Figure 13.

KK Gambling Urges and Behaviour – Daily Ratings
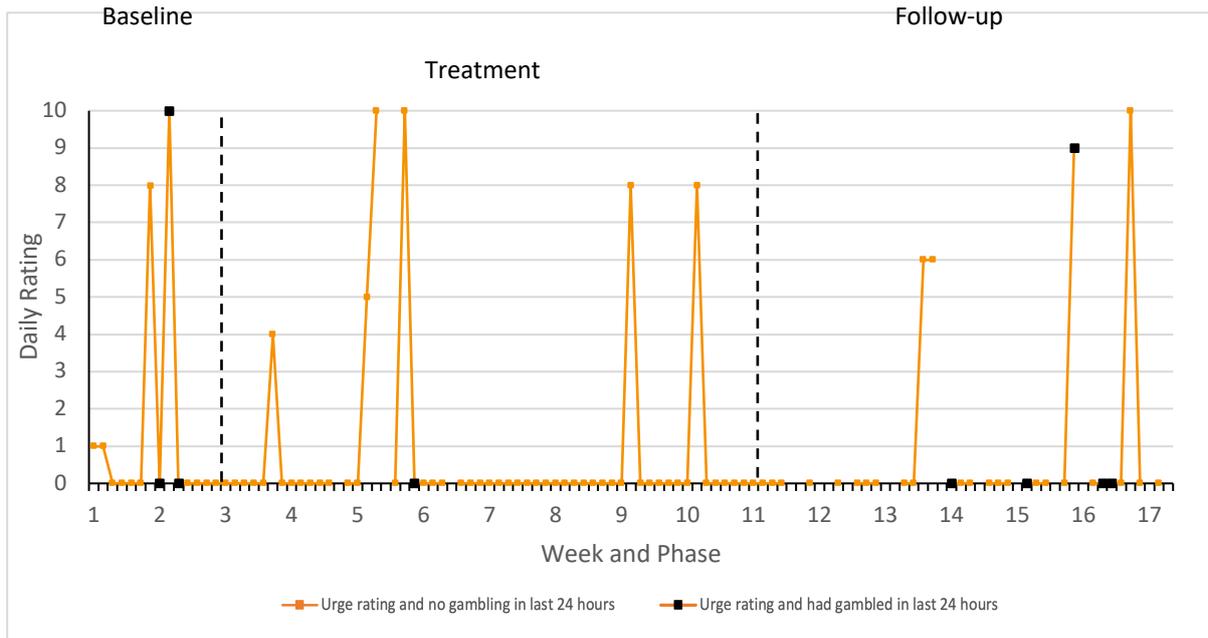
Table 17

KK Days gambling at referral and end of study

	30 days before referral	Last 30 days of study
Days gambling	15	5

Gambling Cognitions

Overall, KK's gambling-related cognitions reliably improved over treatment. The greatest improvements were observed for gambling expectancies and interpretive bias. KK's scores on the GPSS for stigma were high before and after treatment indicating higher expectations of contempt and ostracism from others. KK's GESS score was near maximum at baseline and did not improve significantly, indicating high levels of self-stigma that did not improve through treatment.

KK's scores in abstinence self-efficacy were low at baseline and after treatment, which indicated that she continued to have low confidence in her ability to abstain from gambling. There was a small improvement in her ability to abstain in the face of triggers related to positive moods. However, there was a greater decrease in her ability to abstain in response to social factors; in KK's case the items scored indicated this was primarily in response to feelings of anger and frustration due to a relationship with someone else.

Table 18.

KK Gambling Related Cognitions

Measure	Subscale	Range (Min, Max)	Pre	Post	Outcome
Gambling Related Cognitions Scale (GRCS)	Total	(23, 161)	100	47	Reliable Improvement
	Gambling Expectancies	(4, 28)	18	7	Reliable Improvement
	Illusion of Control	(4, 28)	8	4	Improvement
	Predictive Control	(6, 42)	21	6	Reliable Improvement
	Inability to Stop Gambling	(5, 35)	25	23	Improvement
	Interpretive Bias	(4, 28)	28	7	Reliable Improvement
Gambling Perceived Stigma Scale (GPSS)	Contempt	(7, 28)	24	24	No change
	Ostracism	(6, 24)	16	22	Reliable Deterioration
Gambling Experienced Stigma Scale (GESS)	Total	(13, 52)	51	48	Improvement
Gambling Abstinence Self Efficacy (GASS)	Total	(0, 5)	1.05	1.14	Improvement
	Winning/External Situations	(0, 5)	0	1	Improvement
	Negative Emotions	(0, 5)	0.78	0.89	Improvement
	Positive mood/testing/urges	(0, 5)	1.67	2.3	Improvement
	Social Factors	(0, 5)	3.3	1	Deterioration

* Unable to calculate reliability scores for the GASS

Wellbeing

KKs wellbeing had reliably improved from referral to post-treatment as measured by the CORE-10, PHQ-9, GAD-7 and WSAS. Reliable improvements in wellbeing occurred prior to treatment as measured by the CORE-10. Overall wellbeing had reduced from severe distress to mild distress. Symptoms of depression had reduced from severe to moderate. Symptoms of anxiety had reduced from severe to mild. Scores for work and social functioning had reduced from being moderately severe to being with a range associated with sub-clinical populations.

Table 19.

KK Wellbeing Scores

Wellbeing measure	Referral	Pre CBT group	Post CBT group	RCI	CSC
CORE-10	33	4	12	Reliable Improvement	Not clinically significant
PHQ-9	27		12	Reliable Improvement	Not clinically significant
GAD-7	21		7	Reliable Improvement	Clinically significant
WSAS	36		4	Reliable Improvement	Clinically significant

Note: Pre CBT measures are only available for CORE-10

Group Process

KK's ratings of the GSRS were consistently high: she scored 10 on each scale at each group attended.

Figure 14.

KK Group Session Rating Scale
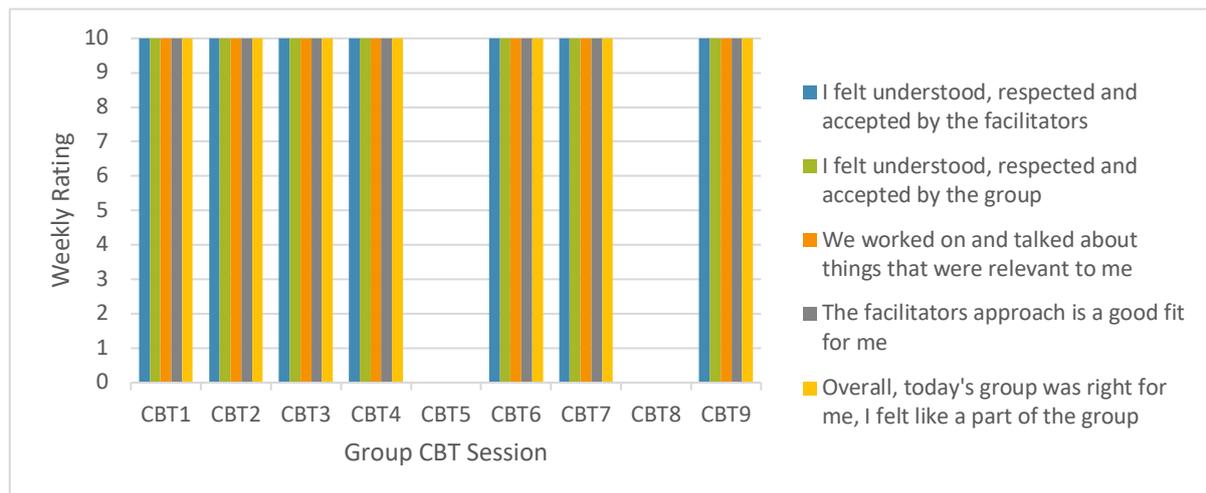
Change Interview

KK explained that since the group she had noticed several improvements: she no longer had suicidal thoughts; she was socialising more and; she was more able to open up to

others. She said the three key goals for her were to feel better, more confident and to understand why she gambles, and she felt that these were achieved. KK explained that she had found her assessment session before the group to be particularly impactful as she had shared some of her experiences with someone else for the first time. In terms of the CBT group content and techniques, she said that she "swore by the balance sheet" and continued to apply this approach in other areas of her life as she appreciated the visual format. She said that it was powerful for her to realise in the group that she "was not the only one". KK explained that she thought that the group happened at a time "when it was supposed to" and that without attending the group she believed that her gambling behaviour and suicidal thoughts would have escalated. She said that the group worked because the help was available, and she was willing to be helped. She said that she made sure that she had time for the group by making adjustments to her work schedule. She also felt that her confidence in expressing her own opinion and participation in group discussions helped her engage with the group.

KK explained that she had unrealistic expectations of the group in that she was hoping that she would be "cured" after completing the CBT group. She said that her urges had not changed at all and she often questioned whether she was strong enough to resist them long term. She said that every time she had a lapse her gambling became more severe and harder to stop. KK said that her confidence in achieving abstinence was directly related to how intense her urges to gamble were on any given day. KK said that she continued to hold negative views about herself and expected negative attitudes from others as her experiences with others continue to confirm to her that people do have negative attitudes towards gamblers.

KK had no criticism of the therapy group. She acknowledged that she was "terrified" of attending the group initially and this was exacerbated by being the only woman in attendance. Despite this, she felt supported by the men in her group.

Participant Summary

KK had a marked reduction in gambling severity prior to the CBT group but this was not maintained after the CBT group. KK's goal for treatment was to become abstinent from gambling. There was a reduction in gambling behaviour and a short period of abstinence during treatment but this was not maintained at follow-up. KK demonstrated improvements in gambling-related cognitions, a reduction in stigmatised views towards herself as a gambler, and increased confidence in maintaining abstinence. However, KK had an increased perception of being ostracised by others due to being a person who has gambling problems. There were reliable improvements in wellbeing, including a reduction in symptoms of anxiety and depression and a reduced impact of gambling on her work and social functioning. KK reported that she noticed improvements in the form of increased ability to open up to others, increase ability to socialise and a reduction in suicidal thoughts. She attributed these changes to the group therapy treatment but acknowledged that her level of motivation to make the changes facilitated this too.

3.2.4 Participant DD

DD was a man who had a 14-year history of gambling on online sports betting. He had received treatment at GamCare previously and had self-exclusion measures in place. He had a period of abstinence for two years before relapsing for a couple of months after which he sought a referral to the NGS. He became abstinent again at the time of referral and started the group therapy six months after this.

Engagement with treatment/research

DD attended for eight of the nine sessions. He missed session seven of the CBT group which covered the topic of challenging gambling thinking. DD provided data for all standardised outcome measures and completed the follow-up interview. He provided data for 93% of weekly measures and 98% of daily measures.

Gambling Behaviour

Standard Measures

DD's gambling severity reduced significantly following treatment as measured by the PGSI. At referral, his score was within the severe range indicating gambling with severe consequences with possible loss of control. The greatest improvement was observed before the CBT group and this was maintained after treatment.

Table 20.

DD PGSI Scores

	Time point 1	Time point 2	RCI	CSC
Overall impact: Referral post-group	18	0	Reliable improvement	Clinically significant
Early impact: Referral to pre-group	18	1	Reliable improvement	Clinically significant
CBT impact: Pre-group to post-group	1	0	Not reliable improvement	N/A

Target Measures

DD's daily urge ratings were scored at zero throughout treatment except two small peaks during week two and six. DD's goal was to remain abstinent throughout treatment. His confidence in achieving this goal remained relatively high, increasing from seven to eight from week three. His closeness to achieving this goal increased from seven to a nine towards the end of treatment. He was abstinent throughout all phases.

Figure 15.

DD Goal (Abstinence) - Weekly Ratings
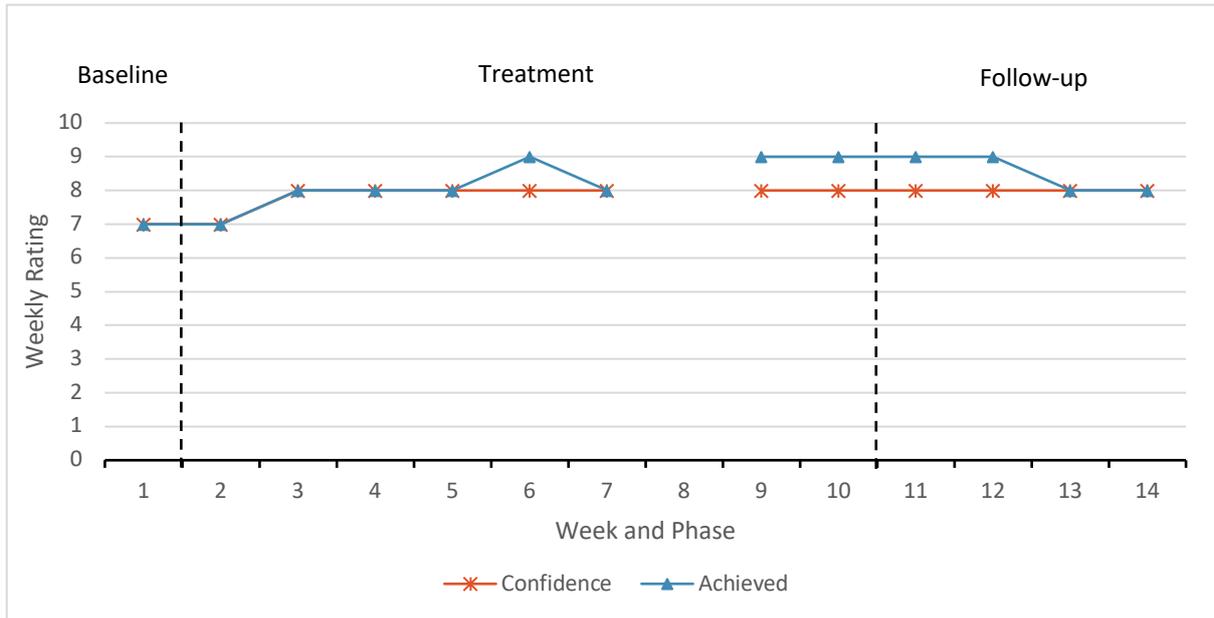
Figure 16.

DD Urges and Gambling Behaviour – Daily Ratings
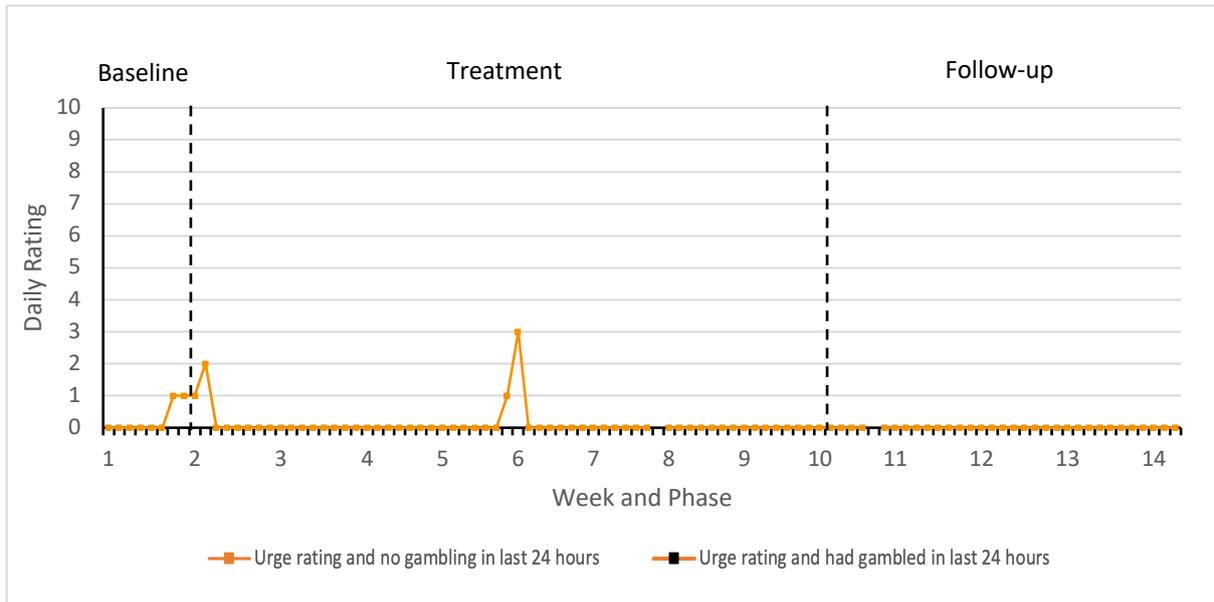
Table 21

DD Days gambling at referral and end of study

	30 days before referral	Last 30 days of study
Days gambling	0	0

Gambling Cognitions

Overall, DD had a reliable decrease in gambling cognitions that support gambling behaviour. The only reliable decrease on the GCRS was on the interpretive bias subscale. DD's scores on the GPSS all improved although none of these changes were reliable. There was no change in DD's self-stigma scores. DD's ratings of self-efficacy in resisting triggers for gambling increased after treatment, with all subscales being near the maximum score. The greatest increases were observed for social factors, and external situations including needing to win back past losses or unexpected gambling opportunities being presented.

Table 22.

DD Gambling Related Cognitions Scores

Measure	Subscale	Range (Min, Max)	Pre	Post	Outcome
Gambling Related Cognitions Scale (GRCS)	Total	(23, 161)	50	23	Reliable Improvement
	Gambling Expectancies	(4, 28)	9	4	Improvement
	Illusion of Control	(4, 28)	4	4	No change
	Predictive Control	(6, 42)	10	6	Improvement
	Inability to Stop Gambling	(5, 35)	11	5	Improvement
	Interpretive Bias	(4, 28)	16	4	Reliable Improvement
Gambling Perceived Stigma Scale (GPSS)	Contempt	(7, 28)	19	17	Improvement
	Ostracism	(6, 24)	11	10	Improvement
Gambling Experienced Stigma Scale (GESS)	Total	(13, 52)	33	32	No change
Gambling Abstinence Self Efficacy Scale (GASS)	Total	(0, 5)	3.19	4.67	Improvement
	Winning/External Situations	(0, 5)	2.83	4.67	Improvement
	Negative Emotions	(0, 5)	3.45	4.89	Improvement

Positive mood/testing/urges		(0, 5)	3.34	4.34	Improvement
Social Factors		(0, 5)	3	4.67	Improvement

* Unable to calculate reliability scores for the GASS

Wellbeing

DD's wellbeing scores as measured by the CORE-10, PHQ-9 and GAS-7 all deteriorated somewhat following treatment. DDs overall wellbeing score had increased from the sub-clinical range to scoring for mild psychological distress. DD's score for anxiety deteriorated from mild symptoms to moderate symptoms. His score for depression symptoms deteriorated from no depressive symptoms to mild depressive symptoms. There was an improvement in social functioning where his score before treatment indicated a significant functional impairment and this improved to be within a subclinical range.

Table 23.

DD Wellbeing Scores

Wellbeing measure	Referral	Pre CBT Group	Post CBT Group	RCI	CSC
CORE-10	1	4	11	Deterioration	Not clinically significant
PHQ-9	2		6	Deterioration	Not clinically significant
GAD-7	6		10	Deterioration	Clinically significant
WSAS	13		0	Reliable improvement	Clinically significant

Note: Pre-CBT measures are only available for CORE-10

Group Process

DD rated each session the maximum of ten for all categories most weeks which highlighted his high level of satisfaction with the group.

Figure 17.

DD Group Session Rating Scale Scores
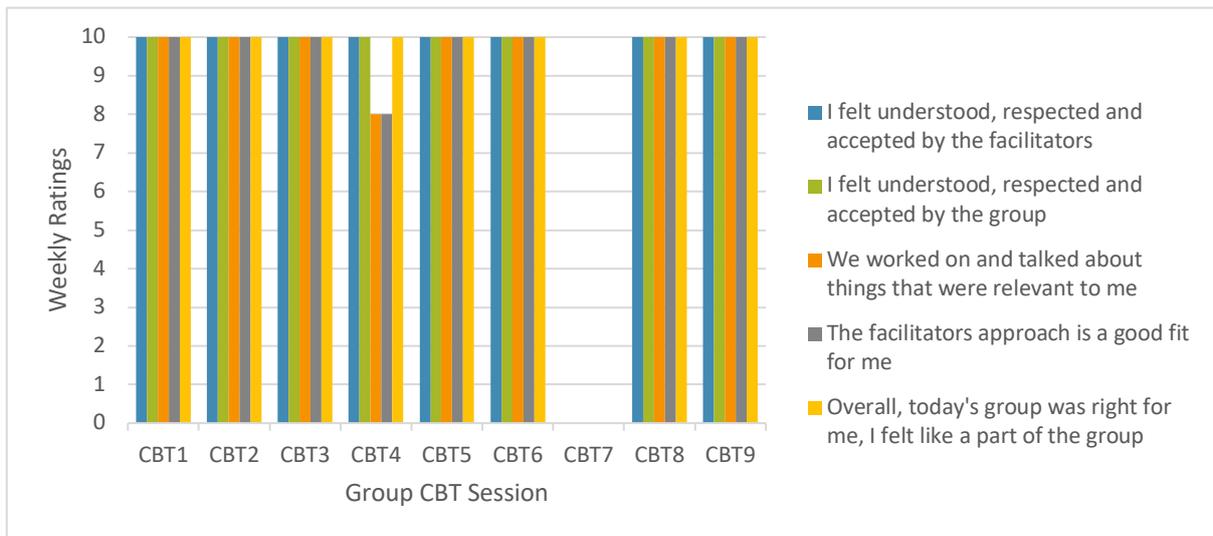
Change Interview

DD explained that he had observed changes in his understanding of how gambling problems developed and a reduction in his feelings of urges in response to high trigger situations including walking past a bookmakers or being out with friends. DD explained that his reported increases in urges during treatment were due to the major national horse racing festivals of Cheltenham and Aintree occurring during those times. DD explained that his symptoms of depression and anxiety had increased during the therapy due to work related stress and this was not linked to gambling. He said that he felt more confident that he could maintain abstinence following the group. DD explained that a score of nine in relation to his treatment goal was the best he could hope for because he knew he could always relapse; he said that choosing not to gamble would always be a conscious effort. He had gone to the CBT group with the hope that it would provide a "eureka moment" where he could learn about a specific cause of his gambling. He said that instead, he discovered there are a combination of factors that can lead to problem gambling. DD explained that the stigma measures in the research did not account for the feelings of being a burden towards others and having the fear

that disclosing his gambling would cause others to be concerned, which impacts his negative feelings towards himself.

DD explained that he had been abstinent for a while before having a lapse that "came out of nowhere" and so his motivation to attend the group was to reduce his likelihood of relapsing. He explained that when negative consequences of gambling still feel "raw" it is easier to remain abstinent but as time passes he forgets about the bad memories and is more likely to be tempted to gamble. He thought that the information that he learned from the CBT group would help him to resist gambling if it remains in the forefront of his mind. He was unsure of how long this could be maintained.

DD thought that he managed to engage well with the group because he had a curiosity in learning about the brain and so he found the content interesting as well as useful. DD said that he benefited from being around other people that were going through the same things as he had. He thought that the group would have developed closer bonds and better opportunity to support each other if they could have attended the group in person. He acknowledged that initially he was apprehensive about attending the group at all and that in hindsight he probably would have found it difficult to take the first step to attending a face-to-face therapy group, but now that he has completed the CBT group he thinks it might have been a better experience.

Participant Summary

DD was abstinent upon attending the Northern Gambling Clinic and his goal was to maintain abstinence. There were marked improvements in gambling severity as rated by the PGSI in the pre-treatment period however no observable behavioural changes due to having low urges at baseline and no incidences of gambling behaviour throughout all phases. There was an improvement in gambling-related cognitions, particularly those relating to interpretive

bias. There was an increase in his confidence in maintaining abstinence when presented with a wide range of high-risk situations. There were no changes in relation to perception of stigmatised views from others and towards himself. DD reported that he had an improvement in his understanding of gambling and increased confidence in maintaining abstinence. He attributed those changes to participation in the group CBT, as well as his own interest and curiosity in the session content facilitating the effectiveness of the therapy. There was a deterioration in DD's wellbeing however this was attributed to factors outside of the treatment and not related to difficulties with gambling.

3.2.5 Participant DH

DH was a woman who gambled on gaming machines in arcades. She had a 28 year history of gambling and was abstinent two days before the group treatment started. She was categorised as a behaviourally conditioned gambler (Pathway 1). She was diagnosed with a mild gambling addiction, meeting four out of nine diagnostic criteria. She had no debts and had not accessed any other treatment prior to attending the Northern Gambling Service. She did not have self-exclusion methods in place. She had a history of homelessness and had moved around various temporary accommodation settings across the country before settling in her residence for eight months.

Engagement with treatment/research

DH attended all nine sessions. DH provided data for all standardised outcome measures and completed the follow-up interview. She provided data for 64% of weekly measures and 93% of daily measures.

Gambling Behaviour

Standard Measures

DH's gambling severity reduced significantly before the CBT group as measured by the PGSI. This score reduced to a level that is indicative of a gambler who experiences no negative consequences. This improvement was maintained after the CBT group.

Table 24.

DH PGSI Scores

	Time point 1	Time point 2	RCI	CSC
Overall impact: Referral to post-group	28	0	Reliable improvement	Clinically Significant
Early impact: Referral to pre-group	28	2	Reliable improvement	Clinically Significant
CBT impact: Pre-group to post-group	2	0	Not reliable improvement	N/A

Target Measures

DHs goal throughout treatment was to be abstinent from gambling. There were no incidences of gambling throughout baseline, treatment, and follow-up. DH missed data collection for three of the treatment weeks and so it is not possible to observe a clear trend in the data. However, there appears to be an increase in confidence from baseline to follow-up, and becoming increasingly closer to her goal of abstinence, with DH reporting that she had fully achieved abstinence by week 12. DH's urge ratings were relatively low throughout all phases but there is a notable drop in urges following week three, after which she continued to rate that she had no urges.

Figure 18.

DH Goal (Abstinence) – Weekly Ratings
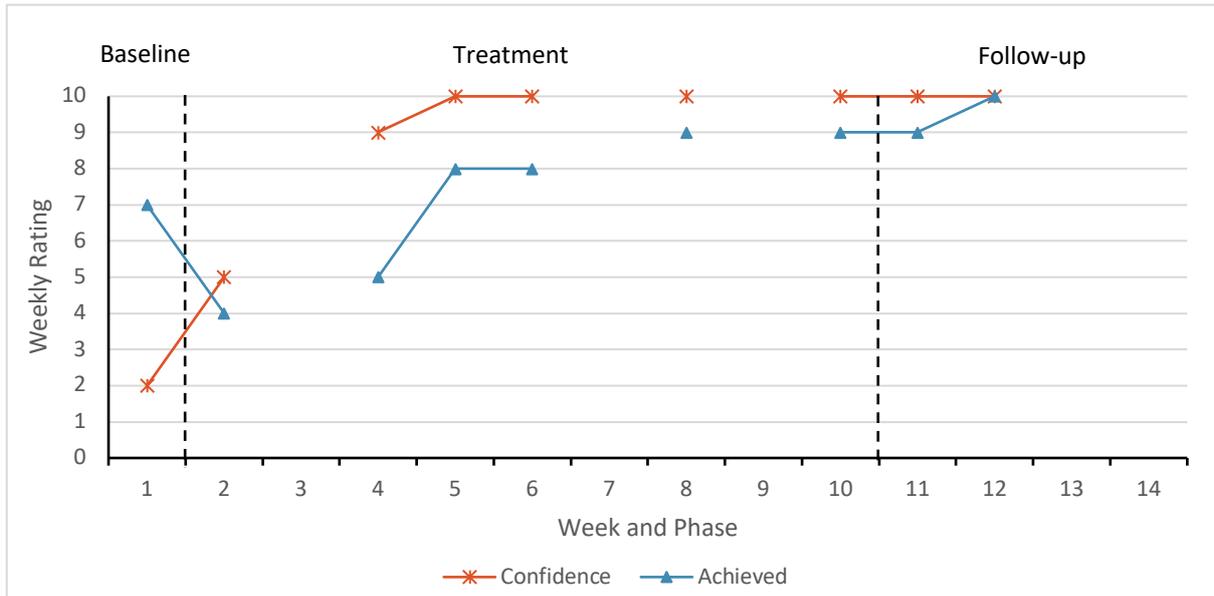
Figure 19.

DH Gambling Urges and Behaviour – Daily Ratings
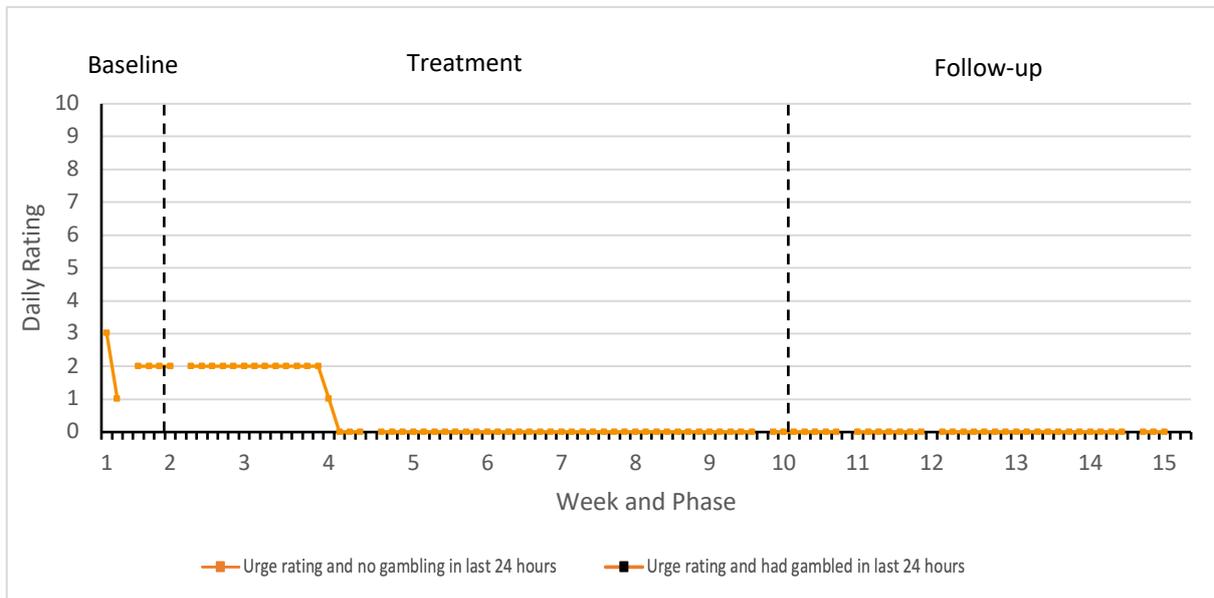
Table 25

DH Days gambling at referral and end of study

	30 days before referral	Last 30 days of study
Days gambling	5	0

Gambling Cognitions

There was a reliable decrease in cognitions that facilitate gambling behaviour across all subscales except for the inability to stop gambling subscale, which was low at baseline but decreased further following treatment. Scores at post treatment were all at the minimum possible score for this measure.

There was a reliable decrease in the contempt subscale of PGSS and only a small reduction on the ostracism subscale. There was a reliable improvement in self-stigma measured by the GESS. It is of note that scores on both stigma measures were at the minimum possible score following treatment.

Scores for self-efficacy in response to high-risk situation all improved following treatment. The most notable increase in self-efficacy for abstinence was in response to high-risk triggers that related to social factors. All subscales were high post-treatment with three subscales achieving the maximum possible score.

Table 26.

DH Gambling Related Cognitions Scores

Measure	Subscale	Range (Min, Max)	Pre	Post	Outcome
Gambling Related Cognitions Scale (GRCS)	Total	(23, 161)	54	23	Reliable Improvement
	Gambling Expectancies	(4, 28)	11	4	Reliable Improvement
	Illusion of Control	(4, 28)	9	4	Reliable Improvement
	Predictive Control	(6, 42)	19	6	Reliable Improvement
	Inability to Stop Gambling	(5, 35)	6	5	Improvement
	Interpretive Bias	(4, 28)	9	4	Reliable Improvement
Gambling Perceived Stigma Scale (GPSS)	Contempt	(7, 28)	12	7	Reliable Improvement
	Ostracism	(6, 24)	7	6	Improvement
Gambling Experienced	Total	(13, 52)	22	13	Reliable Improvement

Stigma Scale (GESS)						
Gambling	Total		(0, 5)	2.24	4.76	Improvement
Abstinence	Winning/External		(0, 5)	2.17	5	Improvement
Self-Efficacy	Situations					
Scale	Negative Emotions		(0, 5)	2.23	4.44	Improvement
(GASS)*	Positive mood/testing/urges		(0, 5)	3.67	5	Improvement
	Social Factors		(0, 5)	1	5	Improvement

* Unable to calculate reliable change for GASS

Wellbeing

DH's overall wellbeing as measured by the CORE-10 reliably improved after treatment, moving from moderate to severe symptoms to a healthy level. DH had low scores for depression and anxiety before treatment and there was no change after treatment. DH's social functioning did not reliably change after treatment but there was a small improvement. This score was low at baseline, indicating there was little to no negative impact of gambling on her social functioning, and this reduced to the minimum possible score following treatment which indicated no negative impact on social functioning.

Table 27.

DH Wellbeing Scores

Wellbeing measure	Referral	Pre CBT group	Post CBT group	RCI	CSC
CORE-10	20	3	0	Reliable Improvement	Clinically significant
PHQ-9	0		0	No change	N/A
GAD-7	5		0	Improvement	Not clinically significant
WSAS	8		0	Improvement	Not clinically significant

Note: Pre-group data is only available for CORE-10

Group Process

DH did not complete measures for three out of nine treatment sessions. Of the data collected, DH gave the maximum score on all items of the group session rating scale which indicated high levels of satisfaction with the group.

Figure 20.

DH Group Session Rating Scale
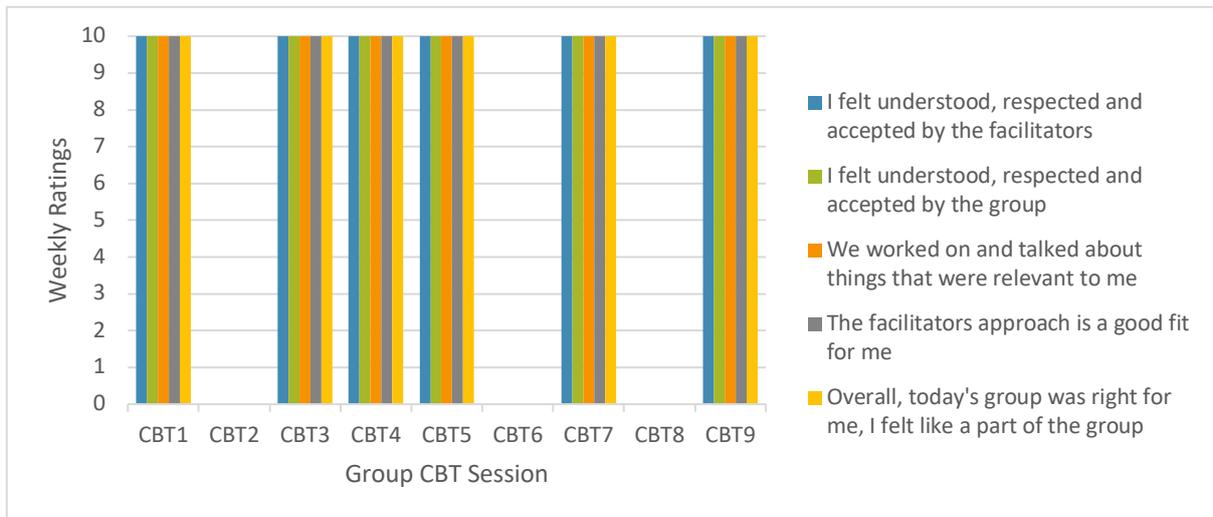
Change Interview

DH noticed following treatment that she was feeling more positive, she was able to open up more and was thinking about gambling less. She could go on day trips and help her friend busking. She said that instead of spending money on the arcades, she bought herself nice things. She said that she became better at accepting help from others. She had been struggling to stay in the same place due to getting "itchy feet" and lived between hostels and being homeless. She said that she had started to feel much more settled and less likely to spontaneously relocate as she had in the past. She said that doing the CBT group had given her a sense of achievement and pride.

DH explained that she had felt better just two days after she stopped gambling. She had made this change immediately before starting the CBT group. She said that she had felt able to make the changes because she had better support than the previous times when she had attempted to stop gambling. She explained that previously, homelessness services had not offered her the help she needed but this time she insisted that they help her. She also felt that the support she had received from the peer mentor and her therapist at the Northern Gambling Service had helped too. She said that accepting this help gave her the confidence to believe that she would be able to stay abstinent. She said that she was never ready to make changes before and had never sought treatment for gambling, but this time felt she had the "right people" around her. She said the main reason why her urges to gamble had stopped was due to this support. She said her own will power was an important factor in being able to stay abstinent. She also benefited from posting about her progress during the CBT group on social media, where she received positive support from others. She was unsure whether she would have experienced the same recovery without the CBT group.

DH said that the best thing about the group was hearing about the stories from other gamblers. This was the first time she had the opportunity to speak to others in the same situation as her.

Participant Summary

DH was abstinent upon attending treatment and her goal was to maintain abstinence. There were marked improvements in gambling severity as rated by the PGSI prior to starting the CBT group. There appeared to be a gradual reduction in urges throughout the treatment period, however no observable behavioural changes due no incidences of gambling behaviour throughout all phases. She remained abstinent from baseline to follow-up. There was an improvement in all gambling-related cognitions with her scores post-treatment indicating that

she did not endorse thoughts that are known to facilitate gambling behaviour. DH had an improvement in her perception of stigmatised views from others and a reduced experience of stigma towards herself. There was an increase in his confidence in maintaining abstinence when presented with a wide range of high-risk situations. DH reported that she had experienced a reduction in gambling thoughts, she was able to open up more and she could participate in more activities that she enjoyed. She attributed those changes to feeling better supported than in previous times when she had tried to stop gambling.

3.2.6 Participant KT

KT is a man who had gambled for 20 years. He gambled on sports bets both online and in bookmakers. He was categorised by the NGS as being an emotionally vulnerable gambler (Pathway 2). He had previously attended treatment with the GamCare service and had some self-exclusion methods in place, no specific information about these interventions were available.

Engagement with treatment/research

KT attended for eight of the nine sessions. He missed session two of the group treatment which meant that he did not cover the content of stimulus control and using the balance sheet in the group setting. He provided data for all standardised outcome measures. He declined to participate in the post treatment change interview. KT completed 69% of daily measures and 71% of weekly measures.

Gambling Behaviour

Standard Measures

KT's gambling behaviour reduced significantly following treatment as measured by the PGSI. At referral, his score was high and indicated that he was gambling with severe consequences with possible loss of control. There was a small improvement was observed before treatment but did not indicate a clinical difference. The greatest improvement was observed post-treatment where his score had reduced significantly. His post-treatment score was indicative of a gambler who experiences no negative consequences.

Table 28.

KT PGSI Scores

	Time point 1	Time point 2	RCI	CSC
Overall impact: Referral to post-group	26	0	Reliable improvement	Clinically significant
Early impact: Referral to pre-group	26	21	Not reliable improvement	Not clinically significant
CBT impact: Pre-group to post-group	21	0	Reliable improvement	Clinically significant

Target Measures

KT's goal was to be abstinent from gambling and this did not change during any phase of treatment. Although there is missing data, there appears to be a gradual improvement in confidence to achieve this goal and closeness to achieving this goal between weeks five and twelve. These scores appear to be related to a gradual reduction in gambling urges and behaviour during weeks two to ten. All of KT's incidences of gambling (n=10) were reported in the first five weeks of treatment and he was then abstinent for the remainder of his time in the research.

Figure 21.

KT Goal (Abstinence) – Weekly Ratings

Figure 22.

KT Gambling Urges and Behaviour – Daily Ratings

Table 29

KT Days gambling at referral and end of study

	30 days before referral	Last 30 days of study
Days gambling	20	0

Gambling Cognitions

There was a reliable improvement in cognitions that facilitate gambling behaviour following treatment. The most prominent improvement was in the inability to stop gambling subscale of the GRCS, which was almost at the maximum score at pre-treatment and markedly higher than the other subscales. Other reliable improvements were observed for gambling expectancies and predictive control.

Scores on both subscales of the GPSS had reliably improved following treatment. This indicated that KT felt less ostracised and/or judged by others in relation to his status as a gambler. There was a small reduction in his score on the self-stigma scale although this was not at a significant level and remained relatively high following treatment.

In relation to self-efficacy in maintaining abstinence, KT had large increases in his scores across all types of triggers for gambling. This implied that following treatment he had a greater level of confidence in his ability to maintain abstinence across a wide variety of high-risk situations.

Table 30.

KT Gambling Related Cognitions Scores

Measure	Subscale	Range (Min, Max)	Pre	Post	Outcome
Gambling	Total	(23, 161)	92	45	Reliable Improvement
Related	Gambling Expectancies	(4, 28)	19	13	Reliable Improvement
Cognitions	Illusion of Control	(4, 28)	4	4	No change
Scale	Predictive Control	(6, 42)	18	7	Reliable Improvement
(GRCS)	Inability to Stop Gambling	(5, 35)	34	8	Reliable Improvement
	Interpretive Bias	(4, 28)	17	13	Improvement
Gambling	Contempt	(7, 28)	25	18	Reliable Improvement
Perceived	Ostracism	(6, 24)	21	18	Improvement
Stigma					

Scale (GPSS)					
Gambling Experienced Stigma Scale (GESS)		(13, 52)	47	43	Improvement
Gambling Abstinence Self-Efficacy Scale (GASS)*	Total	(0, 5)	1.04	4.47	Improvement
	Winning/External Situations	(0, 5)	0.22	4.33	Improvement
	Negative Emotions	(0, 5)	2	5	Improvement
	Positive mood/testing/urges	(0, 5)	2	4.6	Improvement
	Social Factors	(0, 5)	1.04	4.47	Improvement

* Unable to calculate reliable change for GASS

Wellbeing

KTs wellbeing had reliably improved from referral to post-treatment as measured by the CORE-10, PHQ-9, GAD-7 and WSAS. Overall wellbeing had reduced from severe distress to being within a range associated with sub-clinical populations. Symptoms of depression had reduced from severe to no symptoms. Symptoms of anxiety had reduced from severe to no symptoms. Scores for work and social functioning had reduced from being moderately severe to being with a range associated with sub-clinical populations.

Table 31.

KT Wellbeing Scores

Wellbeing Measure	Referral	Pre CBT group	Post CBT group	RCI	CSC
CORE-10	32	25	2	Reliable Improvement	Clinically significant
PHQ-9	24		2	Reliable Improvement	Clinically significant
GAD-7	21		4	Reliable improvement	Clinically significant
WSAS	32		4	Reliable Improvement	Clinically significant

Note: Pre CBT data is only available for CORE-10

Group process

KTs ratings for most group CBT sessions were rated the maximum score. There were two sessions where his score dropped to eight or nine for his ratings of the facilitators approach.

Figure 23.

KT Group Session Rating Scale
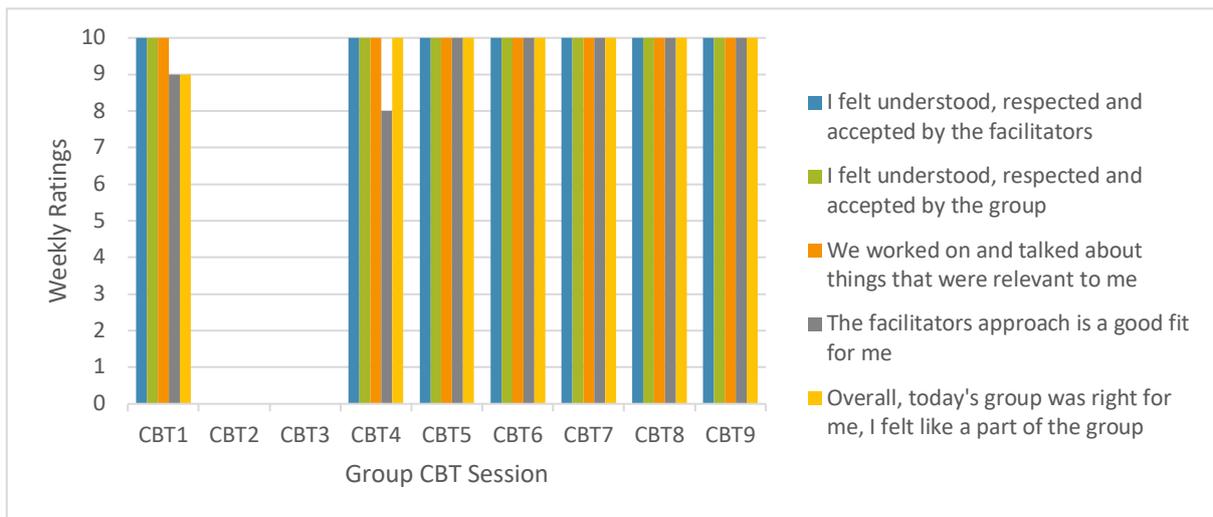
Participant Summary

KT had a marked reduction in gambling severity following treatment. KT's goal for treatment was to become abstinent from gambling. There was a reduction in urges and gambling behaviour that was maintained during a two-week follow-up. KT demonstrated improvements in gambling-related cognitions, a reduction in his perception of stigmatised views from others in relation to his gambling behaviour, and increased confidence in maintaining abstinence. There were reliable improvements in wellbeing, including a reduction in symptoms of anxiety and depression and a reduced impact of gambling on his work and social functioning.

3.2.7 Participant JE

JE was a man who had been gambling for 40 years on fruit machines. He was categorised as an emotionally vulnerable gambler (Pathway 2). He had attended group CBT at the NGS previously and maintained abstinence for one year following this. At the time of referral, he was not abstinent. He had self-exclusion strategies in place including limiting his daily cash withdrawal limit on his bank account and self-excluding from local betting shops.

Engagement with treatment/research

JE attended for all nine sessions of the CBT group. He provided data for all standardised outcome measures and completed the follow-up interview. He completed 100% of weekly measures and 93% of daily measures.

Gambling Behaviour

Standard Measures

JE's gambling severity as measured by the PGSI showed a clinically significant improvement following treatment. There had been a slight worsening in gambling severity prior to commencing the CBT group, although this score remained within the most severe clinical category of the PGSI. Clinically significant improvements were made following treatment where his score was indicative of a gambler who experiences no negative consequences.

Table 32.

JE PGSI Scores

	Time point 1	Time point 2	RCI	CSC
Overall impact: Referral to post-group	11	0	Reliable improvement	Clinically significant

Early impact: Referral to pre-group	11	16	Deterioration	Not clinically significant
CBT impact: Pre-group to post-group	16	0	Reliable improvement	Clinically significant

Target Measures

JE's goal throughout treatment was to remain abstinent from using fruit machines. JE rated his confidence in achieving abstinence highly throughout treatment and follow-up, with all scores above eight. His ratings of how close he was to achieving this goal fluctuated across the phases. Scores varied across the baseline phase until week six (the first week of treatment) where he reported that he had achieved abstinence. In week seven this score dropped to two and gradually increased across the remainder of the treatment phase. JE had high urges to gamble and reported that he had gambled for 20 of the 35 days in the baseline phase. Urges to gamble and gambling behaviour remained high for the first week of the treatment phase. For the remainder of the treatment phase and the follow-up phase, urges remained at zero and there were no further incidences of gambling.

Figure 24.

JE Goal (Abstinence from fruit machines) – Weekly Ratings
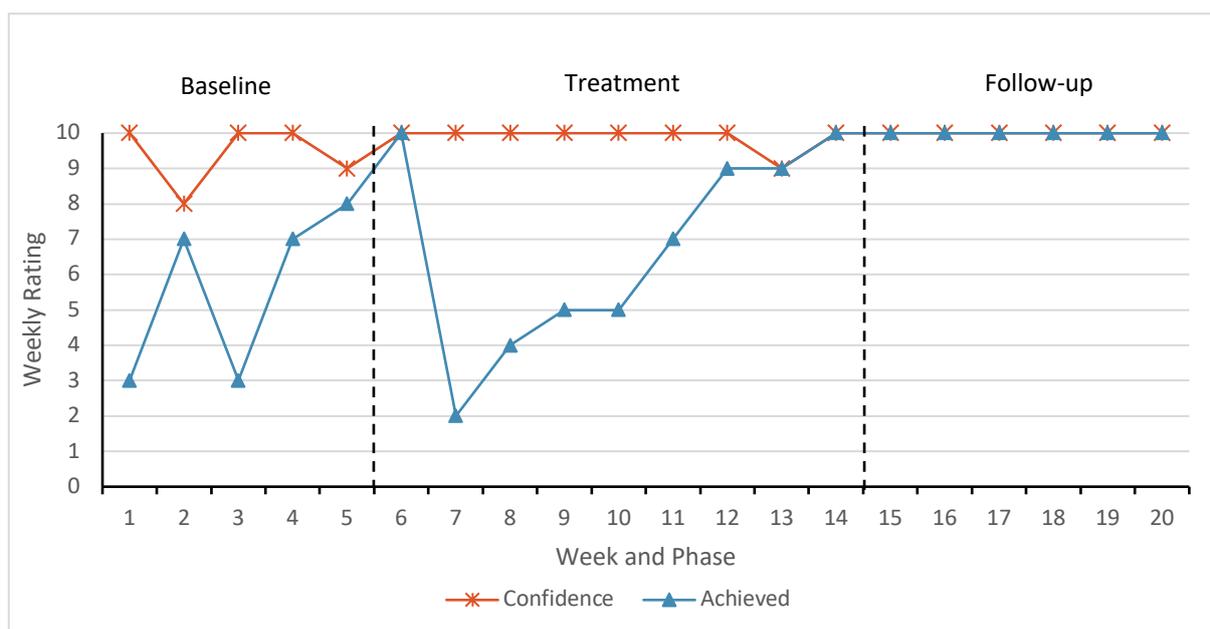
Figure 25.

JE Gambling Urges and Behaviours – Daily Ratings
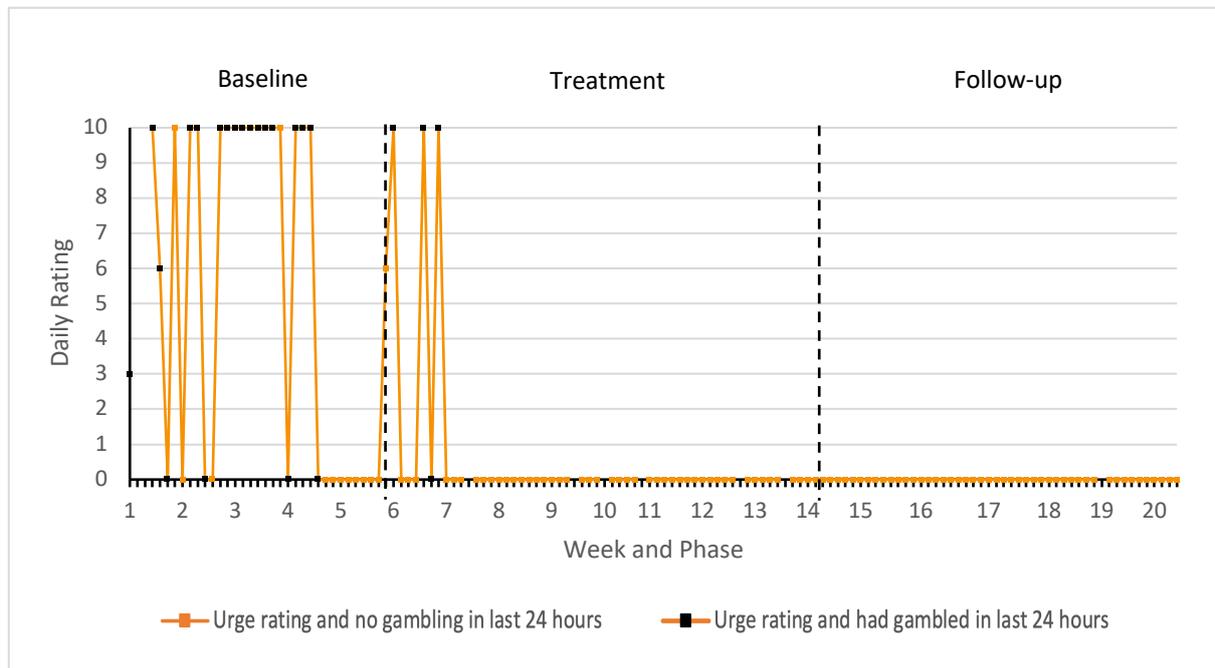
Table 33

JE Days gambling at referral and end of study

	30 days before referral	Last 30 days of study
Days gambling	5	0

Gambling Cognitions

There was a reliable improvement in cognitions that facilitate gambling behaviour following treatment. The most prominent improvement was in the predictive control subscale. JE also had a reliable improvement in his scores for gambling expectancies and interpretive bias subscale.

Scores on the GPSS did not reliably improve following treatment. There was a substantial increase in score on the ostracism scale which indicated that JE had a greater perception that he would be isolated and excluded due to his status as a gambler. There was a significant increase in his score on the self-stigma scale and his score post-treatment was near

the maximum. This indicated that JE held stronger negative views about himself due to him being a problem gambler.

In relation to self-efficacy in maintaining abstinence, JE had large increases in his scores across all types of triggers for gambling. Pre-treatment, JE scored as moderately confident across all subscales. All scores were rated at the maximum post-treatment, indicating that he was extremely confident in his ability to maintain abstinence across a wide variety of high-risk situations.

Table 34.
JE Gambling Related Cognitions Scores

Measure	Subscale	Range (Min, Max)	Pre	Post	Outcome
Gambling Related Cognitions Scale (GRCS)	Total	(23, 161)	57	34	Reliable Improvement
	Gambling Expectancies	(4, 28)	10	4	Reliable improvement
	Illusion of Control	(4, 28)	4	8	Deterioration
	Predictive Control	(6, 42)	20	6	Reliable improvement
	Inability to Stop Gambling	(5, 35)	9	9	No change
	Interpretive Bias	(4, 28)	14	7	Reliable Improvement
Gambling Perceived Stigma Scale (GPSS)	Contempt	(7, 28)	21	22	Deterioration
	Ostracism	(6, 24)	15	18	Deterioration
Gambling Experienced Stigma Scale (GESS)	Total	(13, 52)	27	49	Reliable Deterioration
Gambling Abstinence Self-Efficacy Scale (GASS)*	Total	(0, 5)	3.7	5	Improvement
	Winning/External Situations	(0, 5)	3.7	5	Improvement
	Negative Emotions	(0, 5)	4	5	Improvement
	Positive mood/testing/urges	(0, 5)	2.7	5	Improvement
	Social Factors	(0, 5)	3.5	5	Improvement

* Unable to calculate reliable change scores for GASS

Wellbeing

JE's overall wellbeing as measured by the CORE-10 reliably improved after
treatment, moving from moderate to severe symptoms to a sub-clinical range. JE scored
moderate symptoms of depression before treatment and this improved reliably to no
depressive symptoms following treatment. JE scored for moderate symptoms of anxiety
before treatment and this reduced to no anxiety following treatment. His score for work and
social functioning was within the sub-clinical range before treatment, indicating no impact on
his functioning, and this was maintained after treatment.

Table 35.

JE Wellbeing Scores

Wellbeing Measure	Referral	Pre CBT Group	Post CBT Group	RCI	CSC
CORE-10	23	12	2	Reliable improvement	Clinically significant
PHQ-9	10		4	Reliable improvement	Clinically significant
GAD-7	10		0	Reliable improvement	Clinically significant
WSAS	0		0	No change	N/A

Note: Pre CBT measures are only available for CORE-10

Group Process

JE scored the maximum on almost all ratings of the group CBT sessions, indicating a
high level of satisfaction with the group.

Table 36.

JE Group Session Rating Scale
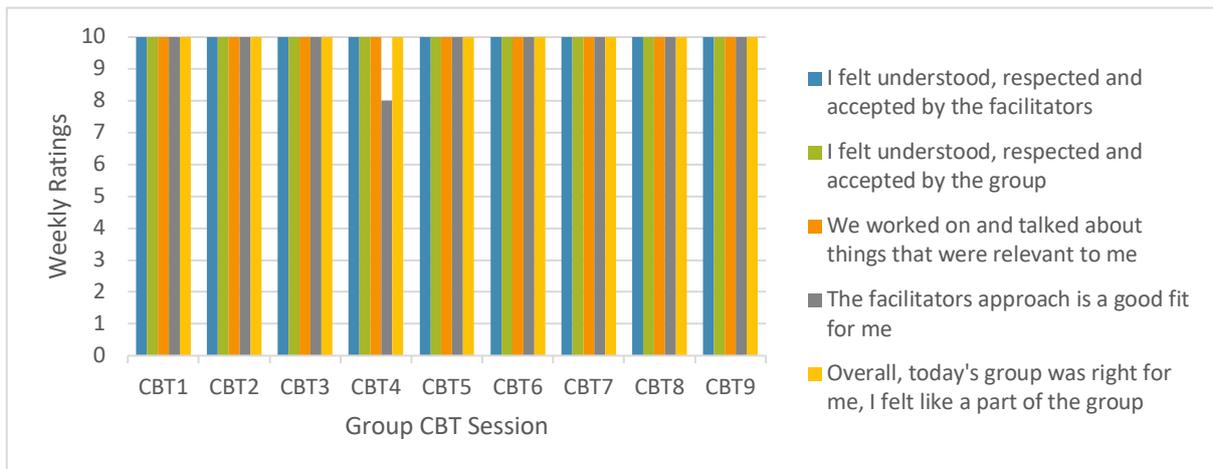
Change Interview

JE's goal was to stop gambling on fruit machines. He explained that he did not want life to be boring and thought that he could engage in other forms of gambling without it being problematic, such as attending horse racing or playing the lottery. JE said that since being in the CBT group he felt more relaxed. Previously he had turned to gambling if he had a stressful morning at work, but following treatment he was able to take a break and think rationally about how to approach the afternoon. This has had an impact on his work which was particularly important due to him being self-employed. He noticed that he was better able to do chores around the house and enjoy trips with his wife. He said that he could find ways to distract himself from gambling.

JE explained that a key factor in him becoming abstinent was that his wife had said that she would leave him if he did not stop gambling. This occurred during the seventh week of the research. He gave up his bank cards and self-excluded from his local betting shops. He said at this point his urges stopped completely because he had set his mind on being abstinent. While this was an important external motivator, JE explained that he could not have made that change without the support of the group. He described having attended the

CBT group before but having been ambivalent about making changes and having felt that his wife was not supportive. During his recent treatment, she had referred herself to the NGS 5 Step programme, which is a supportive therapy offered to affected others. JE said it made a significant difference to the support that she provided him: she was now able to understand that his gambling was an illness and that it was not easy to stop. Although this support had significantly helped his recovery, JE explained that there were some things that he only felt comfortable sharing with the group, and so this forum was important to him.

JE recalled that particularly useful insights from the group were the use of cue cards and developing strategies to resist triggers for gambling. He intended to join the NGS recovery group to further support him in maintaining abstinence.

Participant Summary

JE had a clear improvement in gambling severity. JE's goal was to be abstinent from fruit machines exclusively, as this was the only form of gambling that was problematic for him. There appeared to be a gradual reduction in urges and gambling behaviour. He was abstinent from the second week of treatment up and this was maintained at follow-up. Changes were prompted by external factors but JE felt that the techniques provided and support of the treatment group were essential in actualising those changes. There was an improvement in gambling-related cognitions, particularly those related to gambling expectancies, predictive control and interpretive bias. JE had an improved perception of stigmatised views from others indicating that he had a reduced expectations that others might ostracise or reject him due to being a gambler. There was an increase in his confidence in maintaining abstinence when presented with a wide range of high-risk situations. There was an improvement in JE's wellbeing including a reduction in symptoms of anxiety and depression. Following treatment, JE had a greater level of stigmatised views towards himself,

indicating that his self-esteem had worsened in relation to his gambling. JE reported that he had experienced a reduction in gambling thoughts, he was more relaxed and was better able to engage in his work and social activities.

3.2.8 Participant NL

NL was man who gambled on physical slot machines and scratch cards. He had been gambling for 25 years and had not been in treatment before. He had been categorised by the NGS as an emotionally vulnerable gambler (Pathway 2). He had self-exclusion measures in place by using Gamstop but was not abstinent at referral.

Engagement with treatment/research

NL attended for all nine sessions. NL provided data for all standardised outcome measures but did not attend for the follow-up interview. He completed 89% of daily measures and 79% of weekly measures.

Gambling Behaviour

Standard Measures

NL's gambling severity had reduced significantly following treatment as measured by the PGSI. At referral, his score was within the severe range indicating gambling with severe consequences with possible loss of control. The greatest improvement was observed before the CBT group and this was maintained after treatment

Table 37.

NL PGSI Scores

	Time point 1	Time point 2	RCI	CSC
Overall impact: Referral to post-group	20	2	Reliable improvement	Clinically Significant
Early impact: Referral to pre-group	20	1	Reliable improvement	Clinically Significant
CBT impact: Pre-group to post-group	1	2	Deterioration	N/A

Target Measures

NL's goal throughout the research was to become abstinent from gambling. Within his goal he specifically mentioned not wanting to think about gambling at all. There appeared to be a slight improvement scores for confidence and achieving his goals during the baseline phase. There was a drop in these scores at week five and these appeared to improve over the last half of the CBT group. The improvement in confidence and perception of closeness to achieving his goal appeared to be associated with the prevalence or absence of gambling urges and behaviour during these times. Urge scores during the first four weeks fluctuated but were comparatively much higher than those reported in weeks six to nine. NL reported incidences of gambling for six days out of the 105 days. The majority of these were in the first five weeks (n=5). Following this, NL achieved abstinence for a seven-week period before reporting a lapse in the second week of the follow-up period.

Figure 26.

NL Goal (Abstinence) – Weekly Ratings
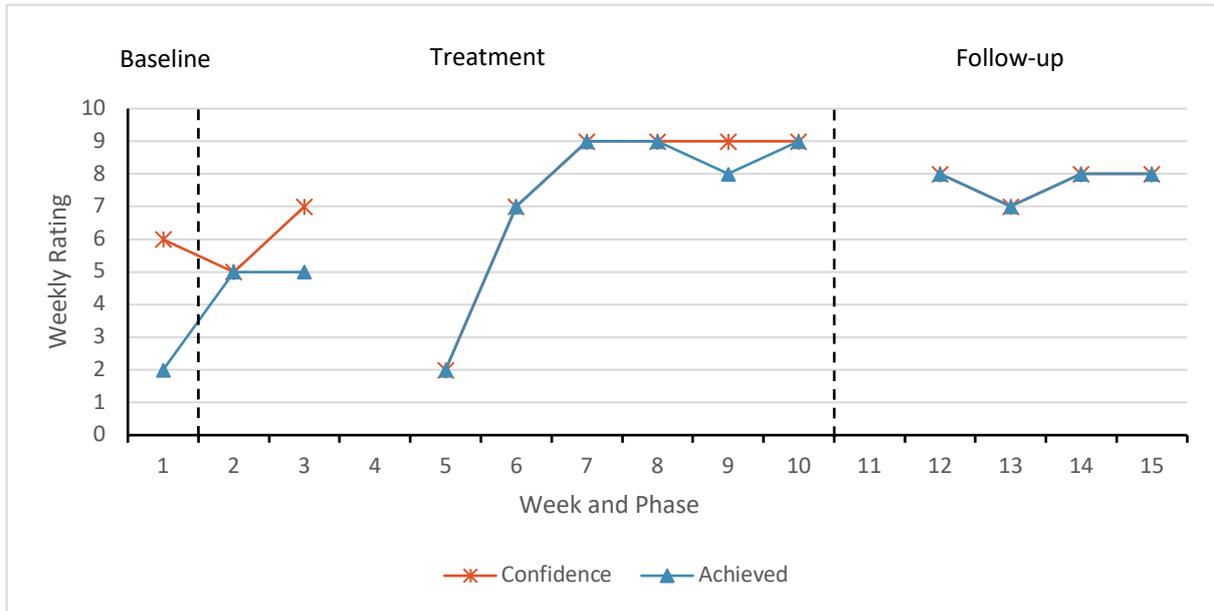
Figure 27.

NL Daily Gambling Urges and Behaviours
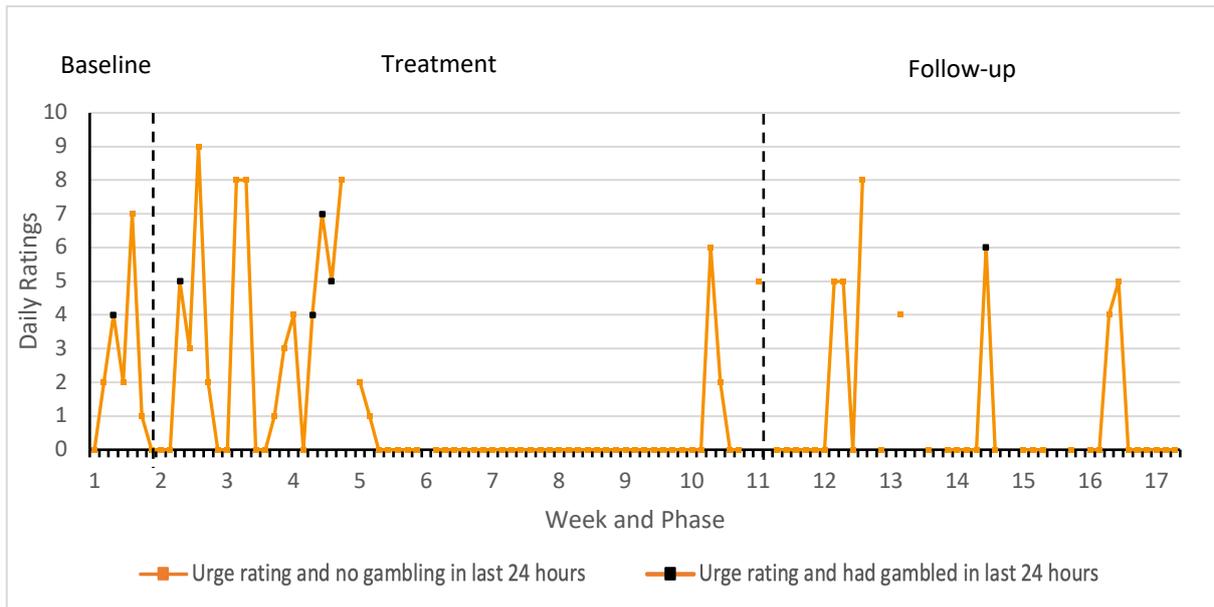
Table 38

NL Days gambling at referral and end of study

	30 days before referral	Last 30 days of study
Days gambling	5	1

Gambling Cognitions

Following treatment, NL had a reliable improvement in cognitions that facilitate gambling behaviour. A reliable improvement was observed on the inability to stop gambling and interpretive bias subscales.

NL's scores for measures of stigma did not improve following treatment. These scores were all relatively high before treatment. There was a reliable deterioration in the contempt subscale. NL's had a high score for self-stigma prior to treatment and this deteriorated slightly further following treatment. Scores for gambling abstinence self-efficacy improved following treatment. Following treatment, NL scores had improved to indicate that he felt moderately confident across all situations, with the exception of situations that relate to social factors where he gave the maximum score and indicated that he was extremely confident.

Table 39.

NL Gambling Related Cognitions Scores

Measure	Subscale	Range (Min, Max)	Pre	Post	Outcome
Gambling Related Cognitions Scale (GRCS)	Total	(23, 161)	74	55	Reliable Improvement
	Gambling Expectancies	(4, 28)	12	14	Deterioration
	Illusion of Control	(4, 28)	4	4	No change
	Predictive Control	(6, 42)	18	11	Improvement
	Inability to Stop Gambling	(5, 35)	26	19	Reliable Improvement
	Interpretive Bias	(4, 28)	14	7	Reliable Improvement
Gambling Perceived Stigma Scale (GPSS)	Contempt	(1, 4)	3	3.14	Deterioration
	Ostracism	(1, 4)	2.5	3	Deterioration
Gambling Experienced	Total	(13, 52)	42	43	No change

Stigma Scale (GESS)						
Gambling	Total	(0, 5)		1.76	2.9	Improvement
Abstinence	Winning/External	(0, 5)		2.17	3.33	Improvement
Self-Efficacy	Situations					
Scale (GASS)	Negative Emotions	(0, 5)		1.33	2.1	Improvement
	Positive mood/testing/urges	(0, 5)		2	2.33	Improvement
	Social Factors	(0, 5)		2	5	Improvement

* Unable to calculate reliable change scores for GASS

Wellbeing

NL's wellbeing scores reliably improved after treatment as measured by the CORE-10, PHQ-9, GAD-7 and WSAS. Prior to treatment, NL's CORE-10 scored within the moderate-to-severe range and following treatment this had reduced to a score that indicated mild psychological distress. NL's pre-treatment depression symptoms were scored within the severely depressive symptoms range and had reduced to moderate depressive symptoms. His anxiety score was within the severe range before treatment and this reduced to being within the mild range. His scores for work and social functioning were moderately severe before treatment and although this score had reliably improved following treatment, this score remained within the same clinical category.

Table 40.

NL Wellbeing Scores

Wellbeing Measure	Referral	Pre CBT Group	Post CBT Group	RCI	CSC
CORE-10	31	19	11	Reliable improvement	Clinically significant
PHQ-9	23		12	Reliable improvement	Not clinically significant
GAD-7	18		7	Reliable improvement	Clinically significant
WSAS	36		21	Reliable improvement	Not clinically significant

Note: Pre CBT data is only available for CORE-10

Group Process

NL's ratings of the group sessions varied throughout the group CBT. He was the most consistent in his ratings of how well understood, respected and accepted he felt by the facilitators which he most often rated as a ten. However, he often rated the facilitators approach scores of between five and nine. His perception of how well he felt understood, respected and accepted by the group fluctuated between scores of seven and ten. Scores on whether he was able to work on and talk about things that were relevant to him tended to be rated between seven and nine.

Figure 28.

NL Group Session Rating Scale
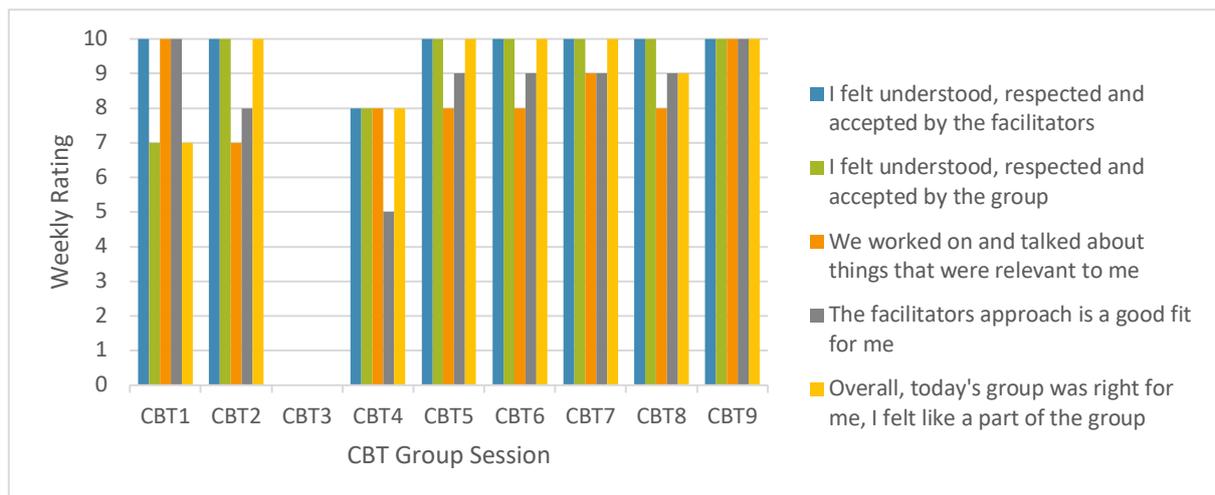
Participant Summary

NL had a distinct reduction in gambling severity following treatment. NL's goal for treatment was to become abstinent from gambling. There was a reduction in urges and gambling behaviour but this was not maintained at follow-up. NL demonstrated improvements in gambling-related cognitions, particularly in regards to his perception of whether he would be able to stop gambling. He had an increased level of confidence in his ability to resist gambling across a wide range of high-risk situations, with him becoming

extremely confident in his ability to manage situations involving social factors. There were reliable improvements in wellbeing, including a reduction in symptoms of anxiety and depression and a reduced impact of gambling on his work and social functioning.

3.3   Summary of Observed Changes

Six of the eight participants completed a post-treatment change interview. A summary of their change interview data is included in Table 41. It details their reported changes since commencing the CBT group, and features of the CBT group that they reported being a something that they benefitted from or found challenging.

Table 41

Summary of change interview reported changes and benefits/challenges in the CBT group

	Reported Changes	**Benefits of Group**	**Challenges of Group**
KU	None	Hearing from peers Having some involvement/support	Peers not being 'serious' about recovery
NT	None	Content: Cue cards and rewards	Peers who were not abstinent
KK	No suicidal thoughts, socialising more, able to open up to others	Content: Balance sheet Feeling like she was not the only one	Being the only woman
DD	Understanding of how gambling problems developed, a reduction in his feelings of urges in response to high trigger situations, increased confidence in maintaining abstinence	Interesting content	Virtual format
DH	Feeling more positive, able to open up more, thinking about gambling less, sense of achievement and pride	Hearing from peers	None

JE	More relaxed, less negative impact on work, house chores and socialising	Content: cue cards and resisting triggers for abstinence	None

Table 42

Summary of Outcomes

	Treatment Goal (Consistent?)	Improvement in gambling severity	Reduction in urges	Maintained?	Reduction in episodes of gambling	Improvement in gambling-related cognitions	Improvement in self-stigma	Improvement in perceived stigma	Improvement in self-efficacy	Observed changes as a result of CBT group?
KU	Abstinence (Yes)	Yes	No	N/A	Yes	No	No	Partial	No	Partial
MS	Abstinence (Yes)	Yes	No	N/A	Yes	No	Yes	No	No	Partial
KK	Abstinence (Yes)	Yes	No	N/A	Yes	Yes	No	No	Yes	Partial
DD	Abstinence (Yes)	Yes	No	N/A	No	Yes	No	No	Yes	Partial
DH	Abstinence (Yes)	Yes	Yes	Yes	Yes	Yes	Yes	Partial	Yes	Partial
KT	Abstinence (Yes)	Yes	Yes	Yes	Yes	Yes	No	Partial	Yes	Yes
JE	Abstinence (Yes)	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes
NL	Abstinence (Yes)	Yes	Yes	No	Yes	Yes	No	No	Yes	Partial

4   Discussion

4.1 Summary of findings

This study aimed to investigate the effectiveness of a group Cognitive Behavioural Therapy (CBT) programme in improving gambling severity and associated difficulties. A Single-Case Experimental Design (SCED) approach was used to gain an insight of what recovery looks like for individuals with gambling disorder and to try to understand factors within therapy that impact their recovery.

The study indicated that treatment as a whole appears to be highly effective, particularly in regards to improving gambling severity and wellbeing. A notable finding was that there is evidently an important early impact during participants time with the service where participants experience sudden gains before the CBT group begins. CBT appears to be effective in improving gambling-related cognitions, abstinence self-efficacy and reducing episodes of gambling urges and behaviours. Service users valued peer support and improved confidence, as well as improvements in their severity of symptoms. There was no evidence that the CBT group improved perceived or experienced stigma. All participants rated the CBT group highly indicating high levels of satisfaction with the treatment. In terms of identifying what is important to gamblers in their recovery, all participants named abstinence as their treatment goal. Participants came to treatment with high levels of motivation and half of participants were already abstinent before starting the CBT group.

The findings for each of the research questions will be explored in the context of relevant literature before outlining related clinical implications. Strengths and limitations of this project will be discussed before considering future research implications.

4.2 Research Aim 1: What does recovery look like for individuals with gambling problems?

4.2.1 Gamblers are aiming for abstinence

In this research, all participants named abstinence as their goal and this remained consistent throughout all phases. It was anticipated that gamblers might have alternative goals that might change throughout treatment, including the goal of controlled gambling, however this was not observed within this sample. Participant JE wanted to be abstinent only from the type of gambling that he considered problematic for him. Previous research indicates that gamblers often seek controlled gambling as a treatment outcome (Ladouceur et al., 2009). Similar reductions in gambling severity have been observed regardless of whether the gambler's goal is to control their gambling or be abstinent (Dowling et al., 2009; Stea et al., 2015). However, researchers have observed that gamblers more often change their goal to abstinence during treatment when they have sought help for gambling problems before (Ladouceur et al., 2009) and when they have a greater severity of gambling problems (Stea et al., 2015). In this sample, most participants had sought support for their gambling previously, were classified as having a severe gambling addiction according to DSM criteria and had some form of self-exclusion strategy in place. In terms of the stages of change model (Prochaska & DiClemente, 1983), higher motivation to change gambling behaviour is also associated with being in the preparation stage of change (Kushnir et al., 2016). Gamblers who are in the preparation stage of change are also more likely to have intrinsic motivation to change (i.e. changing of their own volition) rather than changing behaviour due to external factors (Kushnir et al., 2016). Current participants reported that stopping gambling was necessary due to extreme adverse experiences associated with their gambling and/or pressure from significant others to stop completely. Some participants were fearful of lapses due to having previous periods of abstinence, and reported either being anxious that these could

occur spontaneously or that gambling severity worsened each time they relapsed. Although it was not explicitly stated by participants, it appeared that controlled gambling was not considered a viable recovery option. It should also be noted that the NGS promotes abstinence as a treatment goal and this is emphasised throughout the CBT group, which may have shaped participant goals and expectations for recovery.

4.2.2 Abstinence does not necessarily equal recovery

Levels of confidence were associated with participants' perceptions of how close they were to achieving their goals. This is in line with existing evidence that indicates that confidence in achieving goals is linked with goal attainment (Lozano et al., 2006). It is notable that although the majority of participants achieved their goal of abstinence for at least a month, most participants did not rate their goal as achieved during any phase. Some participants shared their view that abstinence could never be fully achieved because there is always the potential for relapse, and they implied that continued abstinence would be effortful. These comments are similar to those in research from Pickering et al. (2020) where participants report that recovery is ongoing and will feature cycles of progress and relapse. Other gamblers have reported that an absence of urges is optimal but unachievable (Pickering et al., 2020). It has been highlighted that although recovery implies the removal of a condition, recovery in gamblers is thought to be an adaptation where a person learns to function despite the presence of the disorder (Nower & Blaszczynski, 2008). In this way, urges and cravings could still occur but the individual is able to resist and maintain control. It should be acknowledged that a key message within the CBT group was the normalising of lapses and the cyclical nature of the stages of change model, as well as a focus on a realistic appraisal of relapse prevention, which will likely have fostered a cautious approach to sustaining recovery.

Nevertheless, it appears that previous research of gambling treatment outcomes has not captured the complex nature of what gambling recovery means to disordered gamblers. If abstinence does not necessarily equate to recovery for individuals with gambling problems, then other common measures of reduction in gambling severity (e.g. reduced spending, reduced time spent gambling) may not either. This has important implications for how outcomes are measured in research evaluating the effectiveness of therapeutic interventions for gambling addiction.

4.2.3 Abstinence occurs before formal treatment

For many participants, abstinence occurred before treatment started and for some this was achieved at the point of referral to the service. For six of the eight participants, reliable improvements in gambling severity as measured by the PGSI were achieved prior to the CBT group. The observation that improvements were observed after an assessment session and/or brief motivational interviewing sessions mirrors the findings within the brief intervention literature (Carlbring et al., 2010; Larimer et al., 2012; Petry et al., 2008; Quilty et al., 2019; Toneatto, 2016). Previous studies have highlighted that assessment sessions could improve motivation to change behaviour through awareness. It is known within the wider therapeutic literature that initial therapy contact (Aafjes-van Doorn & Sweeney, 2019) and the process of assessment can be therapeutic in itself (Poston & Hanson, 2010). A potential explanation for this impact comes from common factors theory (Wampold, 2015), which suggests that early sessions can be effective in reducing symptoms due to non-specific therapeutic features. These early sessions offer the opportunity to connect with someone who is empathic and caring, as well as the opportunity to gain an adaptive understanding of their difficulties. Important discussions in these early sessions can enable the service user to go through a process of remoralisation, where they are assured that the proposed therapy will be effective and that their difficulties can be improved (Wampold, 2015). There is evidence that increased

perception of treatment credibility and positive expectations is associated with early symptom improvement across a range of disorders (Mooney et al., 2014). In this way, the gamblers may have been motivated towards abstinence or to maintain due to gaining the perception that they have been heard and understood, and that change is possible within the service.

It is known within behaviour change literature that people have increased motivation to make behavioural changes at "temporal landmarks", which are dates that have a particular salience to a person, for example, new year's resolutions (Dai et al., 2014). This "fresh start" effect may be relevant to gamblers where the point of referral acts as a temporal landmark that motivates gamblers to take steps to reduce their gambling. This was observed for one participant who had stated the date that they would stop gambling, which appeared to be when they were due to start the CBT group, and where another participant made the decision to stop gambling completely two days before they started the CBT group. The fresh start effect seems particularly relevant when considering that the majority of gambling addicts do not seek help (Bijker et al., 2022), and so the act of reaching out to a specialist service is likely to be a salient timepoint. This could suggest why participants had made changes following referral but before the CBT group. It appears clear that the referral and assessment process has an impact on the effectiveness of treatment for gamblers, however, fully understanding this process requires further exploration.

4.3   Research Aim 2: How effective is a group CBT programme?

4.3.1 In reducing problem gambling

Given that many participants had reductions in gambling severity as indicated by the PGSI prior to commencing the CBT group, this research was unable to establish that the CBT group was an effective mechanism for reducing gambling. Improvements in gambling severity were found for all participants from baseline to post-treatment, but these changes

could only be attributed to factors relating to their time in the service as a whole. Of those participants who were not abstinent prior to treatment (n=4), all achieved a period of abstinence during the CBT group programme, suggesting positive impact of the treatment. For half of the sample, there was evidence of a reduction in gambling urges during treatment, and three of the four participants who did not improve already had low or no urges during the baseline phase. Despite the quantitative data suggesting that the CBT group did not have much impact, all participants reported that the CBT group was effective and all had high levels of satisfaction. While most did not report that the group was the main mechanism of change for them, some reported that their changes in gambling behaviour, and non-gambling specific behaviour, could not have happened without the support of the group.

4.3.2 In reducing unhelpful gambling cognitions

Most participants had a reliable reduction in unhelpful gambling-related cognitions following treatment as measured by the Gambling Related Cognitions Scale (GRCS). This is consistent with previous literature that observed improvements following CBT (Casey et al., 2017; Dunsmuir et al., 2018). For a more direct comparison, previous research evaluating changes in GRCS scores at the National Problem Gambling Clinic, who deliver the same CBT group as the NGS, found no difference in scores in the GRCS between participants in pre-treatment, during treatment or post-treatment (Michalczuk et al., 2011). They attributed this to a lack of focus on challenging specific gambling distortions within the programme. Previous researchers have queried whether there is a causal relationship between abstinence and GCRS, where the absence of gambling results in a reduction in the endorsement of erroneous beliefs (Oei & Gordon, 2008). Although the current sample had high levels of abstinence pre-treatment, baseline scores on the GCRS were high and for most participants dropped considerably. Participants' scores post-treatment appeared to be consistent with

scores for participants in the Oei and Gordon (2008) study who had been abstinent for 12 months. Given that the current sample were more recently abstinent and had high GCRS baseline scores, there is evidently a process during the group CBT where gambling-related cognitions are being addressed.

The subscales where participants most consistently improved included gambling expectancies, predictive control and interpretive bias. This indicated that most participants were less inclined to believe that gambling is associated with positive outcomes, less likely to believe that they could accurately predict gambling outcomes, and less likely to attribute wins to personal skill or losses to external factors.

High scores in the GCRS are associated with gambling severity (Emond & Marmurek, 2010) which is consistent with participants in this study who had improvements in both gambling severity and GCRS scores. Importantly, higher GCRS scores have been observed to have a greater risk of relapse (Smith et al., 2015b).

4.3.3 In improving confidence in maintaining abstinence

Six participants rated their self-efficacy, with regard to maintaining abstinence across a variety of high-risk situations, as higher after treatment. Gambling Abstinence Self-Efficacy Scale (GASS) scores that improved following treatment were mostly within the moderate (n=2) to extremely confident (n=4) range following treatment. It is not possible to assess whether these changes were reliable as it is a subjective measure, however, those who improved increased their score by either one point (n=3), two points (n=1) or three points (n=1), which on a scale of 1-5 is considered a notable difference. To add strength to these observed differences in self-efficacy scores, individuals who reported increases in confidence on this measure also had improvements on the inability to stop gambling subscale in the GRCS, which directly relates to their perception of self-efficacy. For two participants this

improvement was reliable. High scores on the inability to stop gambling subscale in the GRCS has been observed to be associated with risk of relapse during treatment (Casey et al., 2017; Mallorquí-Bagué et al., 2019), which likely means that for most participants in this study, risk of relapse has reduced following the CBT group. The CBT group focussed on identifying high-risk situations and developing appropriate strategies to manage urges, therefore it was anticipated that this would enable participants to feel prepared to resist relapse. Improvements in self-efficacy in maintaining abstinence were measured pre and post-treatment and so could be attributed to factors within the CBT group, and this is supported by one participant who directly stated that this was their experience. It is notable that the two participants who relapsed during the follow-up period and had higher scores on their inability to stop gambling subscale in comparison to other participants, and lower scores in their confidence in maintaining abstinence, which indicates that these measures were being completed correctly. It appears that for some participants even though there was an improvement in self-efficacy, this was insufficient to effectively reduce risk of relapse in the follow-up period. Participants who had experienced previous lapses and/or were returning to treatment for the second time had shared concerns about maintaining abstinence after treatment. They expressed fears about becoming complacent over time and some identified that accessing the Recovery Group within the NGS could help them to retain learning from the CBT group.

4.3.4 In reducing stigma

There was no evidence that the CBT group improved perceived or experienced stigma as measured by the GESS and GPSS. This was surprising due to the inclusion of these measures being informed by consultation with previous treatment completers. However, other research has also demonstrated that self-stigma does not improve for individuals with

substance use problems (Kulesza et al., 2014), and mental illness (Link et al., 2004), or both (Link et al., 1997), despite improvements in symptoms after treatment.

Participants in this study stated that hearing from peers was beneficial in enabling them to feel like 'they are not the only one'. This process of normalisation should help to reduce stigma. Participants reported having a positive self-image after treatment that seemed inconsistent with their self-stigma scores. It is possible that the self-stigma measures used within this research did not effectively capture these improvements in self-esteem. It is important to acknowledge that experiences of stigma are shaped by the individual's environment and so there is potentially limited scope within the CBT group to create any substantial change in this area. Attribution theory explains that conditions attract greater stigma when they are believed to be caused by controllable factors (Weiner et al., 1988). Public messaging that promotes responsible gambling has been shown to increase stigmatised attitudes (Miller, 2018) and suggests that individuals with gambling problems are irresponsible or have other flaws of character (Wöhr & Wuketich, 2021).

An alternative perspective is suggested by a recent finding that high scores on these measures can be indicative of protective factors in disordered gamblers. High scores in self-stigma are associated with greater help seeking (Leslie & McGrath, 2023). Negative self-perception indicates increased self-awareness and likely motivates towards changing behaviour, and therefore lower self-stigma might be associated with denial. Therefore, it is unsurprising that this sample of treatment-seekers had high levels of self-stigma, although a causal relationship cannot be established in the current study. Conversely, high levels of anticipated ostracism are associated with lower levels of treatment seeking (Leslie & McGrath, 2023) due to avoiding potentially negative responses from treatment providers.

4.3.5 In reducing distress/improving wellbeing

All improved on their level of distress, but most participants showed a clinically significant change in their CORE-10 score before the CBT group started. Some participants made further improvements following the CBT group. The early improvements in distress may be attributable to some of the positive features within the assessment process that are previously mentioned in section 4.1.3.

All participants who had clinically severe scores at baseline measures had reliable and clinically significant improvements on depression scores, anxiety scores and work and social functioning scores. These findings are consistent with previous literature about improvements in psychotherapy for gambling addiction (Carlbring et al., 2010; Carlbring & Smit, 2008; Casey et al., 2017; Dowling et al., 2007; Grant et al., 2009; Nilsson et al., 2020; Oei et al., 2010; Oei et al., 2018). Although these changes were not directly attributable to the CBT group, it is positive that all participants improved in their levels of distress as a result of being involved with the service. This is particularly reassuring as almost all participants were experiencing high levels of distress and therefore this is an important change for them. It is notable that reductions in distress and improvements in social functioning were observed even for participants who were reporting continued gambling urges at the end of treatment. Some participants acknowledged that urges could continue to occur after a period of abstinence and therefore it is positive that participants appear to be less distressed when these urges are present, and potentially indicates that participants are more psychologically resilient to fluctuations in gambling symptoms. These improvements in suggests that the participants risk of relapse is likely to be reduced, as higher levels of distress and lower quality of life scores at the end of treatment have been associated with gambling relapse (Sander & Peters, 2009).

4.4 Research Aim 3: What elements help or hinder in a CBT programme?

It was hoped that weekly data from the group session rating scale, gambling goals, urges and behaviour measures would highlight any specific treatment sessions where therapeutic changes happened. However, given that most participants had behaviour changes prior to treatment commencing, there was limited scope to observe meaningful change at other points during the study.

A positive finding in this study was that all participants generally rated each session highly in terms of therapeutic alliance with facilitators, relationships with peers, relevant content and a suitable approach by facilitators. All of the eight participants completed treatment and attended the majority of sessions, which indicates that they appreciated something about the treatment. The current participants therefore did not appear to be representative of the dropout rates within these treatment groups among those who were not involved in the research. In terms of specific content in the programme, from the change interview data the balance sheet exercise and the use of cue cards and rewards seems to have been useful.

Participants also discussed peer support, particularly the opportunity to hear about the experiences of other gamblers in the groups, as being a positive aspect of the CBT group. Participants were mostly complimentary about the CBT groups and did not highlight any issues that made it difficult for them to engage or benefit from the treatment. However, some potential issues were discussed that may be applicable to all treatment seekers. Several participants spoke about their anxiety regarding attending the group and being fearful before their first session. Given that many service users who were referred to the CBT group but did not participate in the research dropped out during this first session, it is possible that anxiety about the group presented a barrier to commencing treatment. There was limited evidence to indicate how the current participants were able to overcome this barrier, but it could

potentially be due to high levels of motivation at referral or positive expectations regarding the therapy (as discussed in 4.1.3). Other potential factors that enabled them to overcome barriers to treatment are the personal qualities described by participants, including confidence in social settings, determination or social support.

4.5   Clinical Implications

An important finding is that the service as a whole has helped participants to improve in their gambling severity and associated difficulties. Although not all of these improvements were directly attributable to the CBT group, there is promising evidence that treatment services can help gambling addicts in their recovery. The referral process and early contact with service users for these participants had a significant impact on treatment outcomes. This may be due to alliances with treatment providers that foster hope and motivation in service users. Given that there are high rates of drop out in this population, clinicians should continue to mindful of the impact of early interactions with treatment-seeking gamblers .

Similar to previous research, our study indicated that group CBT therapy does not improve perceived stigma or self-stigma. Therefore, treatment for gambling addiction could incorporate features that directly target stigma. It has been recommended that psychoeducation, cognitive restructuring of stigmatised beliefs, and raising awareness of stigma and the impact of stigma, has promising outcomes in reducing self-stigma in stigmatised conditions (Macinnes & Lewis, 2008; Mittal et al., 2012) and greater improvements when combined with CBT in comparison to CBT alone (Young, 2016).

Although participants in the study had increased confidence in maintaining abstinence following therapy, some participants who had previously been abstinent expressed that their motivation for returning to treatment was due to a reduction in their confidence in

maintaining abstinence following a relapse, or experiences that made them concerned that their gambling could re-escalate in severity without intervention. It may be useful to consider treatment needs of returning service users who may not need to revisit all aspects of previous therapy. This could involve a "top up" therapy targeting specific needs, e.g. relapse prevention.

There was no evidence within this study that CBT was the mechanism of change for improvements in gambling severity, and previous research has not found substantial evidence that CBT is more effective than other modalities. The benefits of the group that were identified by participants (peer support, balance sheet, cue cards) are factors that could be included within other modalities. However, there was clear evidence of improvements in gambling-related cognitions within this study which is likely to indicate that the cognitive element of CBT had an effect.

Three participants discussed some concerns about the other members of their CBT group. It should be noted that all participants rated group alliances highly and no participant indicated that group members negatively impacted their recovery in any way. However, one participant commented that she was the only woman in her group and this had been intimidating initially. The prevalence of gambling is higher in men (Public Health England, 2021) and so it is therefore more likely that group therapies will mostly include male participants. This is particularly relevant in gambling populations due to there being increasing evidence that female gambling addicts have different treatment needs to male gambling addicts (Wenzel & Dahl, 2009). Therefore, consideration should be given to how women's treatment needs can be met.

In terms of other characteristics of group members, two participants made the observation that group members were at various stages of recovery. One of these participants shared this concern on behalf of participants who were struggling with relapses and

disclosing these in a group with gamblers who were in the majority abstinent. The other participant shared frustration that, in his perception, there were participants who were less committed to making changes than him. This perception appears to be in contrast with evidence that suggests that in disordered gamblers, peer support is a mutually beneficial process where being a recipient or provider of peer support is associated with higher abstinence self-efficacy and less perceived risk (Hutchison et al., 2018). Peer support allows others to acquire more effective ways of coping (Helgeson & Gottlieb, 2000), and those who provide help are able to improve their own self-efficacy by having the opportunity to view themselves as having strengths (Roberts et al., 1999). In summary, these experiences of feeling different from the others in the group did not appear to hinder participants' recovery, but it highlights that the characteristics of fellow group members can potentially impact engagement with the therapy. Facilitators of group interventions for gambling should monitor for and mitigate problematic dynamics during the treatment.

4.6   Strengths and Limitations

There were key strengths within the methodology that enabled observations of what recovery looks like for disordered gamblers. Using a sample of participants who were actively seeking treatment and using broad inclusion criterion ensured a clinically relevant study in the UK. The inclusion of service user perspectives in the development of the research design enabled for the development of a study that could provide outcomes data regarding factors that are perceived to be important to disordered gamblers.

In line with recommendations detailed by Pickering et al. (2018), a strength of the study was the use of measures that assess the domains of gambling behaviour and symptomatology, as well as psychosocial consequences and quality of life, with consideration of participants own goals for treatment. The use of weekly and daily measures enabled a

clearer perspective of fluctuations, or lack of fluctuations, in symptom severity across treatment, which added an important context to outcomes from standardised measures. Although there had been concerns about the burden of weekly and daily measures, there were high levels of retention and relatively high levels of responses across research measures, which likely indicates that there was an appropriate balance of reducing strain on participants while maintaining adequate data collection to answer the research questions.

Although it was not possible to identify mechanisms of change from the data collected, the focus on attempting to identify these mechanisms through the inclusion of process measures and evaluating change over time was considered to be a positive step in attempting to clarify gaps in previous literature where treatment-specific differences have not been understood. A particular strength was the inclusion of participant's gambling goals, which have not often been considered in previous literature.

However, there were some issues within the research. Although broad inclusion criteria was used in order to recruit an accurate representation of service users, the sample appeared not to be typical of the service users who were referred to the CBT group in that all participants were treatment completers. They had high levels of motivation at referral which are likely to have impacted their recovery trajectory. One participant dropped out during the treatment phase and so could not continue with the study. A qualitative interview at this stage could have helped to understand potential reasons for drop out, and so this was a missed opportunity within the research to add to the literature for the common occurrence of dropout in treatment for gambling disorder.

An unforeseen difficulty in addressing the research questions was the high levels of abstinence at baseline. The study had been designed with a baseline phase to attempt to establish pre-treatment changes, however, for most participants the baseline phase occurred too late to capture these early changes. The study would have therefore benefitted from

repetition of baseline measures during pre-treatment phase, including more frequent administration of the PGSI and measures of wellbeing. Given that abstinence occurred prior to referral for many participants, this is likely to be a difficult process to capture within future research. Furthermore, most baseline phases were much shorter than anticipated, due to participants promptly starting a CBT group after their assessment and so there was limited time in which to enrol participants onto the study, begin baseline measures and attempt to capture pre-treatment changes. As well as abstinence at baseline, all participants had self-exclusion methods in place. Although this indicated that self-exclusions tools were not perceived as sufficient intervention by participants (as they sought further treatment), the absence of opportunity to gamble likely impacted presence of urges or participants ability to gamble, which likely impacted target measure outcomes.

The inclusion of a follow-up period allowed fluctuations in gambling behaviour post-treatment to be observed. However, this was a relatively short period which did not allow for the observation of maintenance in the longer term. Response rates at the 3-month follow-up were poor and so longer-term impact was not captured by standardised measures. Repetition of standardised measures 1 month after the end of treatment rather than 3 months would likely have achieved responses due to participants continuing to be engaged in the research at this stage, and this could have given some indication about maintenance of observed changes.

It was not possible to obtain fidelity measures within the research which meant that it was not possible to identify whether participants in the research received effective CBT.

4.7 Research Implications

This study has demonstrated that the SCED method can be a useful approach for analysing individual response to treatment and can be easily applied in clinical settings. An issue with SCEDs is that findings are not generalisable and so it is essential that these studies

are replicated (Morley, 2018). To achieve greater generalisability, the SCEDs should incorporate the same design, including the therapy delivered and the same measures of change (Sidman, 1960). This study did not manage to capture enough baseline data to understand some of the early improvements within this sample, and so future research using SCEDs should strive to incorporate longer baseline phases to help clarify some of the processes that occur during treatment-seeking and while waiting for treatment to commence. Future SCEDs should also aim to include longer follow-up periods to try and ascertain how changes during therapy are maintained. Qualitative research exploring the experience of sudden gains in gambling addiction treatment would offer useful insights to help better understand this process. Given that improvements in stigma were not observed in this study and this has important implications for relapse prevention in this population, further research is needed to understand treatments that may improve the impact of stigma on recovery from gambling addiction.

4.8   Conclusions

This study aimed to understand what recovery looks like for disordered gamblers by investigating the effectiveness of a group CBT programme in improving gambling severity and associated difficulties using a SCED approach.

The research successfully recruited eight participants who completed the majority of the treatment sessions and the service and study measures. Key findings from the study were that the overall treatment pathway was highly effective in improving gambling severity and wellbeing, and results from this study suggest that the CBT group can be effective in improving gambling-related cognitions and self-efficacy in maintaining abstinence. There was no evidence that the CBT group improved perceived or experienced stigma. A surprising finding was that half of participants were abstinent prior to commencing the CBT group and

there were early changes for participants where improvements in gambling severity and wellbeing were observed before CBT commenced. Clinically, these findings indicate that treatment for gambling disorder is highly effective, however, further research is needed to better understand the early impact within a treatment service, the mechanisms of change involved after referral and during CBT, and to investigate how well these improvements can be maintained in the long-term.

Further research is needed to help clarify and generalise these findings. In this study, the SCED was easily applied in a clinical setting and offered useful insights that helped add context to previous literature, and so it is recommended that further research is conducted by replicating this method.

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Appendix A: London Riverside Research Ethics Committee Favourable Opinion

NHS
Health Research
Authority

London - Riverside Research Ethics Committee
Ground Floor
Temple Quay House
2 The Square
Bristol
BS1 6PN

Telephone: 020 7104 8150

> **Please note**:   This is the favourable opinion of the REC only and does not allow you to start your study at NHS sites in England until you receive HRA Approval

20 October 2022

Rebecca Dalby
Clinical Psychology Training Program
Leeds Institute of Health Sciences, University of Leeds, Level 10 Worsley Building,
Clarendon Way, Leeds
LS2 9NL

Dear Rebecca

Study title:	**Group Cognitive Behavioural Therapy for Gambling Addiction: A Case Series**
REC reference:	**22/PR/0962**
Protocol number:	**N/A**
IRAS project ID:	**309340**

Thank you for your letter of 03 October 2022, responding to the Research Ethics Committee's (REC) request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Chair.

Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised, subject to the conditions specified below.

Appendix B: Participant Materials

Appendix B1: Participant Information Sheet

UNIVERSITY OF LEEDS

Group Cognitive Behavioural Therapy for Gambling Addiction: A Case Series

You are being invited to take part in a research project. Before you decide if you want to take part, it is important for you to understand why the project is being done and what it will involve. Please take time to read the following information carefully.

What is the purpose of this study?

The researchers would like to understand how effective group cognitive behavioural psychological therapy for problem gambling is. The study will explore what recovery looks like for problem gamblers and will look to identify aspects of the therapy that are helpful or unhelpful for recovery. We are also seeking to understand how recovery is maintained after therapy. The research is being completed as part of a Doctorate in Clinical Psychology training course and is sponsored by the University of Leeds.

Why have I been asked to participate?

You have been asked to participate because you are due to start a group cognitive behavioural therapy programme at the Northern Gambling Clinic.

What will be involved if I take part in this study?

Once you have carefully read this document and have decided that you would like to participate in this study, you will need to sign a form to say that you consent to be a participant in this research. You can do this online by following this link: https://leeds.onlinesurveys.ac.uk/ngs-consent-form. This link will also have been emailed to you.

Once you have enrolled in the study, you will attend your group therapy programme as planned. As well as your usual treatment, we will also ask you to:

1. Allow the Northern Gambling Service to share your responses to the questionnaires that you were asked to complete when you first came to the service.
2. Allow us to access demographic information from your referral form. This information helps to provide context to understand how the treatment affects you. This includes information about:
   - What type of gambling you have participated in and how long you had been gambling when you came to the clinic
   - The effect gambling has had on your job/relationships/finances
   - What your gambling looked like before you came to the clinic, including how often, how long per day, how much money spent.
   - Whether you have accessed treatment before and what type, and whether you have accessed self-exclusion tools.

Usual Treatment Pathway	The Gambling Service Questionnaires	Additional Questionnaires/ Interviews for the Research	
Before Treatment			
Referred to Northern Gambling Service	Initial assessments that measure mood	Initial assessments that measure thoughts related to gambling	
During Treatment			
Begin Group Programme	Weekly measure of mood	Weekly measure of goal and group therapy session	Daily measure of urges and behaviour
Attending Group Programme			
End of Treatment			
Immediately After Treatment			
Option to attend the Recovery Group	End of group assessments that measure mood	End of group assessments that measure thoughts related to gambling	
		An interview about changes experienced during treatment	
		Weekly measure of goal and group therapy session	Daily measure of urges and behaviour
1 Month After Treatment			
		Weekly and daily measures stop	
3 Months After Treatment			
	Repeat assessments that measure mood	Repeat assessments that measure thoughts related to gambling	
6 Months After Treatment			
	Repeat assessments that measure mood	Repeat assessments that measure thoughts related to gambling	
		End of research	

3. You will complete some additional questionnaires too. These questionnaires include a set before and after your treatment, and then 3 months after treatment ends and 6 months after treatment ends (these will take around 20-30 minutes). You will also need to complete some brief measures more regularly in the weeks before the programme starts, during the entirety of the programme and for one month afterwards. This includes a short two-question survey every day (which will take no longer than a couple of minutes) and eight questions once a week (which should take no longer than five minutes).

4. You will also be asked to complete an interview at the end of your treatment. This will be an opportunity for you to talk about your experiences of treatment and your recovery. This helps us to understand how effective the treatment is. Within this interview you do not have to answer questions that you are not comfortable with and you can end the interview at any time. This interview will be completed with the researcher and will last up to one hour. The interview will be conducted online via Zoom video call (you do not have to turn your camera on if you prefer not to) and the interview will be video recorded (this will just record the audio if your camera is off).

What are the advantages and disadvantages of taking part?
By participating in this research you will be making an important contribution to the literature for treatments for problem gambling. While this will not benefit you directly, it is hoped that outcomes from this research will help to improve treatments for problem gambling. The main disadvantage to taking part is that you will be required to complete surveys every day for several months, which may feel burdensome.

What if I do not want to take part?
Your participation is entirely voluntary. If you do not want to participate you will continue to receive treatment at the Northern Gambling Clinic as planned. If you do decide to participate in the study but then change your mind, you can withdraw from the study at any time without giving a reason and this will have no impact on your treatment at the clinic.

How will we use information about you?
We will need to use information from you and from the Northern Gambling Clinic for this research project. This information will include your name and contact details.

People will use this information to do the research or to check your records to make sure that the research is being done properly.

People who do not need to know who you are will not be able to see your name or contact details. Your data will have a code number instead.

We may use professional transcribers to write up the interview for analysis. The transcriber will also keep your data confidential. They will have signed a confidentiality agreement.

We will keep all information about you safe and secure. Your contact details and audio recordings will be deleted at the end of the study, and the rest of the data we have about you (consent form, questionnaire data, interview transcription) will be deleted after 3 years.

We will not share information from your questionnaires or interview with the Northern Gambling Clinic. However, if you say something in your questionnaires or interview that makes us concerned about your own safety or the safety of others, we will pass on this information to your group facilitators so that we can keep you/them safe.

Once we have finished the study, we will keep some of the data so we can check the results. We will write our reports in a way that no-one can work out that you took part in the study.

What will happen to the results of the study?
We will analyse your scores on the questionnaires and the information from your discussions with us in order to help us to understand the different ways in which the gambling treatment programme helps people who have gambling problems. The outcomes will be written up as part of a doctoral thesis at the University of Leeds. The outcomes will also be written up for publication in a scientific journal. All participants will also be offered a summary of the outcomes of the study.

What are your choices about how your information is used?

You can stop being part of the study at any time, without giving a reason, but we will keep information about you that we already have.

We need to manage your records in specific ways for the research to be reliable. This means that we won't be able to let you see or change the data we hold about you.

Where can you find out more about how your information is used?

You can find out more about how we use your information:

- at https://dataprotection.leeds.ac.uk/wp-content/uploads/sites/48/2019/02/Research-Privacy-Notice.pdf
- by contacting the University of Leeds Data Protection Officer at: dpo@leeds.ac.uk
- by asking one of the research team (details below)

Who has reviewed this study?
The research was reviewed by the London Riverside Research Ethics Committee who assess whether NHS research is safe and ethical. They were satisfied that the research was ethically sound, and the project was granted approval from the Health Research Authority (HRA) and Health and Care Research Wales (HCRW). More information about this process can be found here: https://www.hra.nhs.uk/about-us/what-we-do/

What if I have concerns/complaints?
If you have any concerns about the research you can contact the researchers below. You can also contact the Patient Advice and Liaison Service at: pals.lypft@nhs.net

Rebecca Dalby
umrd@leeds.ac.uk

Dr Ciara Masterson
ciara.masterson@leeds.ac.uk

Appendix B2: Consent Form

UNIVERSITY OF LEEDS

Consent Form

Group Cognitive Behavioural Therapy for Gambling Addiction: A Case Series

Consent Form
Version 4: 27/09/2022
IRAS ID 302940

Consent Form

	Please enter your initials next to the statement if you agree ✱ *Required*
I confirm that I have read the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.	
I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason. I know that this will not impact my treatment.	
I understand that the care team will share routinely collected clinical data with the research team	

I understand that as a participant in this study I will be asked to complete questionnaires every day for up to 16 weeks.	
I give permission for the interview at the end of treatment to be audio recorded and transcribed.	
I give permission for members of the research team to have access to my anonymised responses. I understand that I will not be identified or identifiable in the data or reports that result from the research. I understand that if quotations are used, anonymity will be preserved. I understand that my responses will be kept strictly confidential.	
I understand that I will receive a copy of this consent form and a copy will also be saved on a secure online server that will only be accessed by the research team.	

	Please enter your initials
(optional) I give permission for the researchers to contact me with information about the results of the study after it is completed	

Please enter your identifier
(this is detailed in the email that was sent to you, e.g. "AB1") ✱ *Required*

Appendix C: Measures

Appendix C1: Problem Gambling Severity Index (PGSI)

Pre Post : Thinking over the last 12 months...

Weekly: Thinking over the last week….

	Not at all	Rarely	Sometimes	Often
1. Have you bet more than you could really afford to lose?	☐	☐	☐	☐
2. Still thinking about the last 12 months, have you needed to gamble with larger amounts to get the same feeling of excitement?	☐	☐	☐	☐
3. When you gambled, did you go back another day to try to win back the money you lost?	☐	☐	☐	☐
4. Have you borrowed money or sold anything to get money to gamble?	☐	☐	☐	☐
5. Have you felt you might have a problem with gambling?	☐	☐	☐	☐
6. Has gambling caused you any health problems, including stress or anxiety?	☐	☐	☐	☐
7. Have people criticised your betting or told you that you had a gambling problem, regardless of whether or not you thought it was true?	☐	☐	☐	☐
8. Has your gambling caused any financial problems for you or your household?	☐	☐	☐	☐
9. Have you felt guilty about the way you gamble or what happens when you gamble?	☐	☐	☐	☐

Appendix C2: Clinical Outcomes Routine Evaluation (CORE-10)

Over the last week...

	Not at all	Only occasionally	Sometimes	Often	Most or all of the time
1 I have felt tense, anxious or nervous	0	1	2	3	4
2 I have felt I have someone to turn to for support when needed	4	3	2	1	0
3 I have felt able to cope when things go wrong	4	3	2	1	0
4 Talking to people has felt too much for me	0	1	2	3	4
5 I have felt panic or terror	0	1	2	3	4
6 I made plans to end my life	0	1	2	3	4
7 I have had difficulty getting to sleep or staying asleep	0	1	2	3	4
8 I have felt despairing or hopeless	0	1	2	3	4
9 I have felt unhappy	0	1	2	3	4
10 Unwanted images or memories have been distressing me	0	1	2	3	4

Total (Clinical Score*)

Appendix C3: Patient Health Questionnaire (PHQ-9)

Over the last 2 weeks, how often have you been bothered by any of the following problems?	Not at all	Several days	More than half the days	Nearly every day
1 Little interest or pleasure in doing things	0	1	2	3
2 Feeling down, depressed, or hopeless	0	1	2	3
3 Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4 Feeling tired or having little energy	0	1	2	3
5 Poor appetite or overeating	0	1	2	3
6 Feeling bad about yourself — or that you are a failure or have let yourself or your family down	0	1	2	3
7 Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8 Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9 Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

PHQ9 total score

(Data item 37 in the IAPT Data Standard)

Appendix C4: Generalised Anxiety Disorder Scale (GAD-7)

Over the last 2 weeks, how often have you been bothered by any of the following problems?	Not at all	Several days	More than half the days	Nearly every day
1 Feeling nervous, anxious or on edge	0	1	2	3
2 Not being able to stop or control worrying	0	1	2	3
3 Worrying too much about different things	0	1	2	3
4 Trouble relaxing	0	1	2	3
5 Being so restless that it is hard to sit still	0	1	2	3
6 Becoming easily annoyed or irritable	0	1	2	3
7 Feeling afraid as if something awful might happen	0	1	2	3

GAD7 total score

(Data item 38 in the IAPT Data Standard)

Appendix C5: Work and Social Adjustment Scale (WSAS)

People's problems sometimes affect their ability to do certain day-to-day tasks in their lives. To rate your problems look at each section and determine on the scale provided how much your problem impairs your ability to carry out the activity.

1. **WORK** - if you are retired or choose not to have a job for reasons unrelated to your problem, please tick N/A (not applicable)

0	1	2	3	4	5	6	7	8	N/A
Not at all		Slightly		Definitely		Markedly	Very severely, I cannot work		☐

2. **HOME MANAGEMENT** – Cleaning, tidying, shopping, cooking, looking after home/children, paying bills etc

0	1	2	3	4	5	6	7	8
Not at all		Slightly		Definitely		Markedly	Very severely	

3. **SOCIAL LEISURE ACTIVITIES** - With other people, e.g. parties, pubs, outings, entertaining etc.

0	1	2	3	4	5	6	7	8
Not at all		Slightly		Definitely		Markedly	Very severely	

4. **PRIVATE LEISURE ACTIVITIES** – Done alone, e.g. reading, gardening, sewing, hobbies, walking etc.

0	1	2	3	4	5	6	7	8
Not at all		Slightly		Definitely		Markedly	Very severely	

5. **FAMILY AND RELATIONSHIPS** – Form and maintain close relationships with others including the people that I live with

0	1	2	3	4	5	6	7	8
Not at all		Slightly		Definitely		Markedly	Very severely	

total score ☐

Appendix C6: The Gambling Related Cognition Scale

Please indicate (by circling) the extent to which you agree with the value expressed in each statement (1 = strongly disagree; 2 = moderately disagree; 3 = mildly disagree; 4 = neither agree or disagree; 5 = mildly agree; 6 = moderately agree; 7 = strongly agree)

1 Gambling makes me happier.

2 I can't function without gambling.

3 Praying helps me win.

4 Losses when gambling, are bound to be followed by a series of wins.

5 Relating my winnings to my skill and ability makes me continue gambling.

6 Gambling makes things seem better.

7 It is difficult to stop gambling as I am so out of control.

8 Specific numbers and colours can help increase my chances of winning.

9 A series of losses will provide me with a learning experience that will help me win later.

10 Relating my losses to bad luck and bad circumstances makes me continue gambling.

11 Gambling makes the future brighter.

12 My desire to gamble is so overpowering.

13 I collect specific objects that help increase my chances of winning.

14 When I have a win once, I will definitely win again.

15 Relating my losses to probability makes me continue gambling.

16 Having a gamble helps reduce tension and stress.

17 I'm not strong enough to stop gambling.

18 I have specific rituals and behaviours that increase my chances of winning.

19 There are times that I feel lucky and thus, gamble those times only.

20 Remembering how much money I won last time makes me continue gambling.

21 I will never be able to stop gambling.

22 I have some control over predicting my gambling wins.

23 If I keep changing my numbers, I have less chances of winning than if I keep the same numbers every time.

Appendix C7: Gambling Experienced Stigma Scale

We are interested in your thoughts about your own gambling experiences. Please indicate how much you agree with each of the following statements.

Important: When you think about gambling DO NOT include lottery tickets, instant scratch tickets or raffles, but DO include all other types of gambling such as poker machines, card games, racing, sports betting, day trading, bingo and casino games.

	Strongly Disagree (1)	Somewhat Disagree (2)	Somewhat Agree (3)	Strongly Disagree (4)
1. I feel the need to hide my gambling from my friends				
2. I sometimes have the thought that I've screwed up my life by gambling				
3. Most people would always suspect that I'd returned to gambling, even if I didn't gamble anymore				
4. People have insulted me because of my gambling				
5. I have the thought that I should be ashamed of myself for my gambling				
6. People can tell that I am a gambler by the way I look				
7. Others think I am not worth the investment of time and resources because I ama gambler				
8. I sometimes have the thought that I deserve the bad things that have happened to me in life because I gamble				
9. I feel the stress in my life is what causes me to gamble				
10. Others view me as morally weak because I am a gambler				
11. I avoid situations where another person might have to depend on me				
12. I don't think I can be trusted because I gamble				
13. Once they know I'm a gambler, most people will take my opinion less seriously				

Appendix C8: Gambling Perceived Stigma Scale

We are interested in your thoughts about people who gamble. For each of the following statements, please consider how you think people who gamble are generally perceived by others.

Important: When you think about gambling DO NOT include lottery tickets, instant scratch tickets or raffles, but DO include all other types of gambling such as poker machines, card games, racing, sports betting, day trading, bingo and casino games.

	Strongly Disagree (1)	Somewhat Disagree (2)	Somewhat Agree (3)	Strongly Agree (4)
1. Most people think problem gamblers are liars				
2. Once they know a person is a problem gambler, most people will take his or her opinion less seriously				
3. Most people think that problem gamblers tend to be unreliable				
4. Most people think that problem gamblers are unable to handle responsibility				
5. Most people think that problem gamblers are lazy				
6. Most people think that problem gamblers are greedy				
7. Most people believe that problem gamblers have no self-control				
8. Many people would be uncomfortable communicating with a problem gambler				
9. Most people think less of a problem gambler 10.				
11. Most people would not hire a problem gambler to take care of their children				
12. Most people would be suspicious of a person if they knew they were a problem gambler				
13. Most people would not want to enter into a committed relationship with someone they knew had a gambling problem				
14. Many people would avoid a person who had a gambling problem				

Appendix C9: Gambling Abstinence Self-efficacy Scale

Gambling Abstinence Self-efficacy Scale (GASS)

Instructions: The following questions are a list of reasons why people begin to gamble again after they have given up gambling. Please rate these on how confident you are that you will not gamble in that situation. Zero means that you are not at all confident and five means that you are extremely confident that you will not gamble.

Circle only one number for each item.

Reasons for beginning to gamble	Not at all Confident		Moderately Confident		Extremely Confident	
1) I felt angry or frustrated, either with myself or because things were not going my way.	0	1	2	3	4	5
2) I felt anxious or tense.	0	1	2	3	4	5
3) I felt sad.	0	1	2	3	4	5
4) I felt physically uncomfortable because I wanted to gamble.	0	1	2	3	4	5
5) I was in a good mood.	0	1	2	3	4	5
6) I wanted to see what would happen if I gambled just a little.	0	1	2	3	4	5
7) I just felt tempted to gamble out of the blue.	0	1	2	3	4	5
8) Someone invited me to gamble.	0	1	2	3	4	5
9) I felt angry or frustrated because of my relationship with someone else.	0	1	2	3	4	5
10) I was with others having a good time and we felt like gambling together.	0	1	2	3	4	5

Reasons for beginning to gamble	Not at all Confident		Moderately Confident		Extremely Confident	
11) I felt worried or tense because of my relationship with someone else.	0	1	2	3	4	5
12) I felt others were being critical of me.	0	1	2	3	4	5
13) I saw others gambling.	0	1	2	3	4	5
14) I wanted to win.	0	1	2	3	4	5
15) I needed to win back past losses	0	1	2	3	4	5
16) An opportunity to gamble happened out of the blue.	0	1	2	3	4	5
17) I felt lucky	0	1	2	3	4	5
18) I felt pressured by financial debts	0	1	2	3	4	5
19) When I am in a situation in which I am in the habit of gambling.	0	1	2	3	4	5
20) When I wanted to escape from my thoughts and feelings.	0	1	2	3	4	5
21) When I didn't care anymore	0	1	2	3	4	5

Appendix C10: Daily Gambling Urges and Behaviour

Information about gambling urges will help us to understand treatments. Please answer the following two questions, this should only take a few minutes of your time. Please remember to complete this short survey every day.

On a scale of 0-10, to what extent are you feeling the urge to gamble today?

- ☐ 0
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7
- ☐ 8
- ☐ 9
- ☐ 10

In the last 24 hours, have you gambled? *

- ☐ Yes
- ☐ No

Optional: You may add any comments that you feel are relevant to this question

[   ]

Appendix C11: Weekly Gambling Goals

In relation to your gambling, what do you want to achieve from the programme?

(note: this goal may have changed from previous weeks or you may have already achieved it)

[ ]

With this goal in mind...

	0	1	2	3	4	5	6	7	8	9	10
On a scale of 0-10, how confident do you feel in achieving this goal? (0= not at all, 10= completely confident)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
On a scale of 0-10, how close are you to achieving this goal? (0= not at all, 10= achieved)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Appendix C12: Group Session Rating Scale

Thinking about the group CBT session you participated in today, rate the following statements:

	0 - Completely Disagree	1	2	3	4	5	6	7	8	9	10 - Completely Agree
I felt understood, respected, and accepted by the facilitators	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
I felt understood, respected, and accepted by the group	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
We worked on and talked about things that were relevant to me	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
The facilitators approach is a good fit for me	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Overall, today's group was right for me, I felt like part of the group	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Appendix C13: Interview Schedule

Adapted from Elliott's Change Interview (2008) and to be used as a guide.

1. General Questions: [about 5 min]
1a. How are you doing now in general?
1b. What has therapy been like for you so far? How has it felt to be in therapy?
1c. What medications are you currently on? (interviewer: record on form, including dose, how long, last adjustment, herbal remedies)

2. Changes: [about 10 min]
2a. What changes, if any, have you noticed in yourself since therapy started? (Interviewer: Reflect back change to client and write down brief versions of the changes for later. If it is helpful, you can use some of these follow-up questions: For example, Are you doing, feeling, or thinking differently from the way you did before? What specific ideas, if any, have you gotten from therapy so far, including ideas about yourself or other people? Have any changes been brought to your attention by other people?)
2b. Has anything changed for the worse for you since therapy started?
2c. Is there anything that you wanted to change that hasn't since therapy started?

3. Change Ratings: [about 10 min] (Go through each change and rate it on the following three scales:)
3a. For each change, please rate how much you expected it vs. were surprised by it? (Use this rating scale:)

(1) Very much expected it
(2) Somewhat expected it
(3) Neither expected nor surprised by the change (4) Somewhat surprised by it
(5) Very much surprised by it

3b. For each change, please rate how likely you think it would have been if you hadn't been in therapy? (Use this rating scale:)

(1) Very unlikely without therapy (clearly would not have happened)
(2) Somewhat unlikely without therapy (probably would not have happened) (3) Neither likely nor unlikely (no way of telling)
(4) Somewhat likely without therapy (probably would have happened)
(5) Very likely without therapy (clearly would have happened anyway)

3c. How important or significant to you personally do you consider this change to be? (Use this rating scale:)

(1) Not at all important (2) Slightly important (3) Moderately important (4) Very important

(5) Extremely important

4. Attributions: [about 5 min] In general, what do you think has caused the various changes you described? In other words, what do you think might have brought them about? (Including things both outside of therapy and in therapy)

5. Resources: [about 5 min]
5a. What personal strengths do you think have helped you make use of therapy to deal with your problems? (what you're good at, personal qualities)
5b. What things in your current life situation have helped you make use of therapy to deal with your problems? (family, job, relationships, living arrangements)

6. Limitations: [about 5 min]
6a. What things about you do you think have made it harder for you to use therapy to deal with your problems? (things about you as a person)
6b. What things in your life situation have made it harder for you to use therapy to deal with your problems? (family, job, relationships, living arrangements)

7. Helpful Aspects: [about 10 min] Can you sum up what has been helpful about your therapy so far? Please give examples. (For example, general aspects, specific events)

8. Problematic Aspects: [about 5 min]
8a. What kinds of things about the therapy have been hindering, unhelpful, negative or disappointing for you? (For example, general aspects. specific events)
8b. Were there things in the therapy which were difficult or painful but still OK or perhaps helpful? What were they?
8c. Has anything been missing from your therapy? (What would make/have made your therapy more effective or helpful?)

9. The Research:. [about 10 min]
9a. What has it been like to be involved in this research? (Initial screening, research interviews, completing questionnaires etc)
9b. Can you sum up what has been helpful about the research so far? Please give examples.
9c. What kinds of things about the research have been hindering, unhelpful, negative or have got in the way of therapy? Please give examples.

10. Suggestions: [about 5 min] Do you have any suggestions for us, regarding the research or the therapy? Do you have anything else that you want to tell me?

Appendix D: Email Templates

CONSENT EMAIL

Subject: University of Leeds Research

Attachments: Participant Information Sheet v1

Dear NAME,

My name is Becky and I'm a researcher at the University of Leeds. I am emailing you because you have expressed an interest in participating in research that is being completed at the Northern Gambling Clinic. Before you decide whether you would like to be involved in this project, I would like you to read the information sheet I have attached to this email, so that you know what will be involved. If you have any questions about the project, I encourage you to get in touch with me by replying to this email.

If you would like to participate, please follow this link to provide your consent and enrol in the study. I will then be in touch to explain what happens next.

LINK HERE HTTPS://

Thank you for taking the time to consider being involved in this study.

Best wishes,

Becky Dalby

Researcher at the University of Leeds

FIRST EMAIL

Subject: University of Leeds Research

Dear NAME,

Thank you for agreeing to participate in the research project. As discussed, I will now begin to send you links to your surveys. Today, I would like you to complete a questionnaire that will take up to 20 minutes of your time. Please follow the link below:

LINK HERE HTTPS://

Starting from DATE, I will begin to regularly send you some shorter surveys:

- daily reminders to complete our urges and gambling behaviour check-in (which should only take a few minutes)
- a weekly reminder to complete our goals questionnaire (which will take up to 5 mins maximum)

I really appreciate you taking the time to complete these measures each day. Your responses will help us to better understand treatments for gambling addiction.

If you have any difficulties completing these measures, or no longer want to participate in the research, please get in touch.

Best wishes,

Becky Dalby

Researcher at the University of Leeds

WEEKLY EMAIL

Subject: University of Leeds Research – Weekly Survey

Good afternoon,

Here is your weekly survey link.

LINK HERE HTTPS://

This should take up to 5 minutes of your time. Please could you complete this by the end of the day.

Once again, thank you for continuing to take the time to complete these measures. Your responses will help us to better understand treatments for gambling addiction.

If you have any difficulties completing these measures, or no longer want to participate in the research, please do get in touch.

Best wishes,

Becky Dalby

Researcher at the University of Leeds

DAILY EMAIL

Subject: University of Leeds Research - Daily Rating

Good afternoon,

Here is your daily survey link.

LINK HERE HTTPS://

This should take just a few minutes of your time. Please could you complete this by the end of the day. If you have forgotten a day, please do not worry – we would be grateful if you could resume today's survey as normal.

The link to the survey is the same each day, so you can favourite this link or save it somewhere else for easier access if you need to.

Thank you for taking time to complete these surveys each day, your responses will help us to shape services for gambling addiction.

If you have any difficulties completing these measures, please do get in touch.

Best wishes,

Becky Dalby

Researcher at the University of Leeds

POST THERAPY EMAIL

Subject: University of Leeds Research – End of Group Measures

Dear NAME,

Thank you for continuing to complete these questionnaires throughout your treatment, your contributions really are appreciated! Now that you have come to the end of your group CBT programme, we would like you to complete one longer survey. This should take around 20 minutes. Please follow the link below:

LINK HERE HTTPS://

I would also like you to continue just 4 more weeks of the weekly and daily measures. I will continue to send your weekly and daily reminder emails.

As we discussed before your treatment, I will also be getting in touch shortly to arrange an interview about your experiences of the treatment programme.

If you have any difficulties completing these measures, or no longer want to participate in the research, please get in touch.

Best wishes,

Becky Dalby

Researcher at the University of Leeds

END OF WEEKLY/DAILY MEASURES

Subject: University of Leeds Research – Follow Up Measures

Dear NAME,

Thank you for completing a further four weeks of questionnaires, we will now stop sending you weekly and daily survey reminders. We appreciate your ongoing participation over the last few months and your involvement so far has been really helpful for the research.

As was discussed previously, we would like you to complete just two more surveys. We will send each of these around the time of your network meetings with a clinician, in 2 months time and in 5 months time. Please keep an eye on your inbox for these surveys.

Best wishes,

Becky Dalby

Researcher at the University of Leeds

POST FOLLOW-UP EMAIL

Subject: University of Leeds Research – Follow Up Measures

Dear NAME,

It has now been 3 months since you completed your group CBT programme. As mentioned previously, please could you complete the following survey:

LINK HERE HTTPS://

This survey should take around 20-30 minutes to complete.

We will send one more survey in 3 months time.

Thank you once again for your continued participation in our research. Your ongoing engagement is helping us to understand the long-term impact of treatment for gambling addiction.

Best wishes,

Becky Dalby

Researcher at the University of Leeds

FINAL EMAIL

Subject: University of Leeds Research – Final Measures

Dear NAME,

It has now been 6 months since you completed your group CBT programme. As mentioned previously, please could you complete one final survey:

LINK HERE HTTPS://

This survey should take around 20-30 minutes of your time. This is the last survey that we would like you to complete.

Thank you so much for being a part of this research, your participation has been incredibly helpful. If you have expressed an interest in the results of this study, we will be in touch to share these with you in Autumn 2023.

Best wishes,

Becky Dalby

Researcher at the University of Leeds

OPTIONAL PROMPT:

CHECK IN

Subject: University of Leeds Research – Please Respond

Dear NAME,

I have noticed that you have not completed your surveys for some time. I just wanted to check in to see if you were having any difficulties with the survey links.

As a reminder, you will receive one survey link <u>once a week</u> usually titled "University of Leeds Research – Weekly Survey" as well as another survey link sent <u>every day</u> usually titled "University of Leeds Research – Daily Ratings". It is really useful for the study if you can complete these weekly or daily as requested.

I appreciate that it could be difficult to complete these regularly. If you are having trouble completing the surveys, please let me know and we can consider how to make this more convenient.

If you no longer want to participate in the research, please let me know.

Best wishes,

Becky Dalby

Researcher at the University of Leeds

Appendix E: Reliable Change Index and Clinically Significant Change Figures

Measure	Reliable Change Index	Clinically Significant Change
PGSI	7	≤ 7
CORE-10	6	≤ 11
PHQ-9	5.83	≤ 5
GAD-7	4	≤ 8
WSAS	8	≤ 9
GCRS Total	16.36	N/A
GCRS Illusion of Control	4.82	N/A
GCRS Gambling Expectancies	5.87	N/A
GCRS Predictive Control	9.08	N/A
GCRS Inability to Stop Gambling	6.78	N/A
GCRS Interpretive Bias	4.9	N/A
GPSS Contempt	4.61	N/A
GPSS Ostracism	4.10	N/A
GESS Total	7.92	N/A

Note. Psychometric data is from the following sources; PGSI (Milic et al., 2022), CORE-10 (Barkham et al., 2013) ,PHQ-9 (Kroenke et al., 2010), GAD-7 (Spitzer et al., 2006), WSAS (Zahra et al., 2014), GCRS (Raylu & Oei, 2004), GPSS & GESS (Leslie & McGrath, 2023).