Contingency management for the treatment of harmful gambling: A case report

Christopher J. Seel [a],[d],[*], Hannah Champion [a], Lucy Dorey [b], Jack McGarrigle [a], Darren R. Christensen [c], Richard May [d], Alice E. Hoon [e], Simon Dymond [a],[f]

[a] *School of Psychology, Swansea University, Singleton Campus, Swansea SA2 8PP, UK*
[b] *Faculty of Medicine, University of Southampton, SO17 1BJ, UK*
[c] *Faculty of Health Sciences, University of Lethbridge, Lethbridge, Alberta, Canada*
[d] *School of Psychology and Therapeutic Studies, University of South Wales, Pontypridd, CF371DL, UK*
[e] *Swansea University Medical School, Singleton Campus, Swansea SA2 8PP, UK*
[f] *Department of Psychology, Reykjavík University, Menntavegur 1, Nauthólsvík, 101 Reykjavík, Iceland*

ABSTRACT

Contingency management (CM) is an effective behavioural treatment for substance use disorder (SUD) that involves providing incentives (e.g., vouchers) for target behaviours related to recovery. Despite evidence of its efficacy with SUD, little is known about its feasibility for the treatment of other addictive disorders. Here, we sought to investigate the feasibility of a remote-delivered CM intervention in promoting gambling treatment-related outcomes. Voucher-based incentives were provided contingent on abstinence from gambling, attendance at treatment, and completion of weekly recovery-related goals. Overall, the present findings indicate that CM procedures can be feasibly and advantageously applied as an adjunct treatment to promote recovery from harmful gambling. Further research is needed on larger-scale evaluations and methods of disseminating the wider adoption of CM for the treatment of harmful gambling.

1. Introduction

International prevalence studies estimate that 1.29 % of adults may experience harm from gambling, with a further 2.43 % at risk of harm (Gabellini et al., 2023). Harmful gambling is associated with significant adverse consequences including financial difficulties, reduced quality of life, poor physical and mental health, and increased suicidality (Browne et al., 2017; Kristensen et al., 2023; Morasco et al., 2006). Furthermore, each individual experiencing gambling harms may impact between four and six significant others (e.g., family members, friends, work colleagues; Goodwin et al., 2017). Given the widespread acceptance of harmful gambling as a public health challenge, there is a crucial need to identify effective treatments for individuals and their affected others (Johnstone and Regan, 2020).

Psychological therapies such as cognitive behavioural therapy (CBT) and motivational interviewing (MI) are efficacious in treating harmful gambling, at least in the short term (Pfund et al., 2023b; Yakovenko et al., 2015). Only one in five of those engaging in harmful gambling seek help (Bijker et al., 2022), and attrition is high, with as many as 39 %

of those seeking help dropping out of treatment early (Pfund et al., 2021). These levels of attrition are a concern, given that higher attendance in treatment is related to better outcomes (Pfund et al., 2020). For those that do complete treatment, treatment gains are also not universal, with some individuals responding better than others (Pfund et al., 2023a). As such, there is an ongoing need for the development and evaluation of adjunct interventions to be employed alongside CBT and MI to improve help-seeking rates, treatment retention, and foster longer term treatment effectiveness.

Contingency management (CM) is a behavioural intervention shown to be effective in improving retention and treatment outcomes for substance abuse disorders (SUDs; Davis et al., 2016; Pfund et al., 2022a,b). In CM-based interventions, tangible incentives, usually in the form of vouchers, are provided as rewards for agreed, treatment-related behaviours. Grounded in principles of operant conditioning, the voucher-based incentives as part of CM interventions are contingent on objective evidence of the target behaviours but withheld in their absence. Contingency management approaches can be flexibly applied as an adjunct to existing treatments and consistently produce large effect

---

* Corresponding author.
E-mail address: c.j.seel@swansea.ac.uk (C.J. Seel).

sizes on abstinence over standard treatment across an array of addictive substances (Pfund et al., 2022a) and promote long-term abstinence and recovery (Ginley et al., 2021).

Typically, CM interventions target abstinence from substance abuse using biochemical verification (e.g., urine drug tests; Petry, 2013). However, CM has also been successfully employed to target attendance in treatment, producing large effect sizes for treatment retention, and an independent positive effect on abstinence outcomes for substance abuse (Pfund et al., 2022b). Other studies have also evaluated the impact of CM on the completion of both health- or recovery-related goals along-side abstinence (Petry et al., 2001, 2010). Advantages of reinforcing goal completion may include improving therapeutic alliance and psychosocial outcomes beyond reinforcement of abstinence alone, with the approach also fitting comfortably within typical protocols of existing clinical practice (Petry, 2000). There is also some evidence to suggest that targeting completion of recovery-related goals may have an independent effect on abstinence (Iguchi et al., 1997; cf. Petry et al., 2006). Further work that investigates the potential additive effect of CM-based voucher incentives for goal completion in recovery may therefore be warranted.

Little is currently known of the utility of CM for the treatment of harmful gambling (Christensen et al., 2018; Christensen, 2013). An unpublished pilot study by West (2008) suggested CM was efficacious for treatment retention, gambling frequency and money spent. In the study, the target behaviours were participant-selected goals, rather than abstinence from gambling. More recent work has recruited stakeholder perspectives toward the potential extension of CM procedures for the treatment of harmful gambling with both treatment service providers (Dorey, Christensen, et al., 2022; McGarrigle et al., 2023) and clients (Dorey, McGarrigle, et al., 2022). Both groups reported being generally open to the use of CM, with service users further suggesting that incentives might encourage earlier engagement with support, retention in treatment, and act as an initial bridge to recovery.

The purpose of the present case study was therefore to evaluate the feasibility of CM procedures in practice for the treatment of harmful gambling. The study aims were:

1. To evaluate the feasibility and acceptability of CM as an intervention for promoting attendance in treatment, abstinence from gambling, and completion of goals related to recovery.
2. To explore the practicality of remote-delivered CM as an adjunct treatment for harmful gambling.

2. Materials and method

Ethical approval was obtained from the School of Psychology Research Ethics Committee at Swansea University prior to conducting this study.

2.1. Participant

We initially sought adult participants for single-case experimental design evaluations of CM. Participants were eligible for inclusion if they were English speaking, had capacity to provide consent, had a diagnosis of gambling disorder (DSM 5) or scored 8 or higher on the PGSI. Exclusion criteria were a medically unmanaged physical or mental health condition likely to interfere with treatment. Recruitment was conducted via social media and through established contacts with online and in-person gambling treatment providers who informed potential participants about the study. Due to time and funding constraints, a limited recruitment period was available for this study, within which only one participant registered interest. We therefore elected to proceed using a case study design rather than a single-case experimental design with the one recruited participant.

"Jack" was a 38-year-old white British male in full-time employment in the Armed Forces who had sought help after gambling more than he

could afford to lose. Jack was recruited via an online gambling treatment service provider, who provided details of the opportunity to participate at intake. Whilst participating in the study, the participant was also in receipt of treatment from an online provider offering cognitive behavioural therapy, motivational interviewing, and relapse prevention.

Jack's total *Problem Gambling Severity Index* (PGSI) score was 16, indicating they reported 'problem gambling' with negative consequences and a possible loss of control. Jack's preferred form of gambling was fruit/slot machines or online casino games. He had not previously sought treatment or support for his gambling and had gambling website blocking software (Gamban) installed on his smartphone.

Jack reported gambling debts of an undisclosed amount that were currently managed by a debt management agency. He noted that the trigger for gambling was his monthly payday, and that he would typically gamble his salary each month until he ran out of money. In the previous 28 days, Jack estimated he had wagered and lost £950, but had not gambled for the 14 days prior to first contact with the researcher. We did not collect a more detailed gambling history (i.e., duration and experience of harm), focusing instead on current gambling symptoms (see measures below).

2.2. Measures

We collected self-report measures at baseline and post-treatment completion. We also collected measures of gambling and recovery-oriented behaviour during weekly sessions across the 8-week study. After study completion, we also collected data on the validity of the intervention (i.e., acceptability of procedures and participant satisfaction) and conducted a follow-up interview with Jack. The self-report outcome measures used are described below.

2.3. Gambling symptoms

The *Gambling Symptom Assessment Scale* (G-SAS; Kim et al., 2009) is a 12-item scale used to assess the severity of gambling symptoms, and includes items evaluating gambling urges, thoughts related to gambling, time spent gambling, emotional responses to gambling, and harm. Each item is scored from 0 to 4, with total scores ranging from 0 to 48. Higher scores indicate more extreme symptoms.

The *Gambling Urge Scale* (GUS) is a six-item measure of gambling urges. Items require respondents to score how strongly they agree to statements about their gambling urges (e.g., "All I want to do now is to gamble."; Raylu and Oei, 2004). Scoring provides a total score out of 42, with higher scores indicating a stronger urge to gamble.

The *Recovery Index for Gambling Disorder* (RIGD) is a 40-item assessment of positive outcomes related to recovery from gambling disorder across six dimensions (gambling reduction, urge coping, recovery insight, interpersonal relationships, life functioning, and mental health; Pickering et al., 2021). The RIGD provides a dimensional score from 0 to 10 as well a composite score from 0 to 60. Higher scores are indicative of a higher level of recovery.

The timeline follow-back interview method was used to assess days gambled and net expenditure (i.e., amounts won and lost) on gambling over the previous 28 days (Hodgins and Makarchuk, 2003). This strategy involves the interviewer and respondent jointly constructing a calendar of the period of interest (i.e., the previous 28 days), and marking key dates such as birthdays or holidays on it as an aid to the recall of gambling episodes.

2.3.1. Quality of life
To assess quality of life, we utilised the single-item *Global Quality of Life* scale (Hyland & Sodergren, 1996) ranging from 0 ("no quality of life") to 100 ("perfect quality of life"; Hyland & Sodergren, 1996) and the World Health Organization quality of life assessment (WHOQOL-BREF). This measure provides scores on a 0–100 scale across four quality

of life domains (physical health, psychological, social relationships, and environment; WHOQOL Group, 1998), with higher scores indicating higher quality of life.

2.3.2. Intervention validity and satisfaction

We utilised two questionnaires to assess the participant's views of, and satisfaction with, the intervention. The *Service User Survey of Incentives* is an 18-item assessment that evaluates respondent endorsement of positive and negative beliefs toward CM (Getty et al., 2022). Responses are coded across four domains: positive beliefs, limitations, ethical or moral objections and negative side effects. Items on this survey were adapted to recruit views of contingency management for gambling (see supplementary materials). The *Client Satisfaction Questionnaire* (CSQ-8; Larsen et al., 1979) is an eight-item assessment that uses a four-point scale to provide a score from 8 to 32 of client satisfaction with services. Higher scores are indicative of higher satisfaction.

2.3.3. Contingency management measures

Behaviours targeted for change via contingency management procedures were measured weekly. Specifically, we recorded attendance at weekly meetings, self-reported expenditure and frequency of gambling in the previous week, and whether the participant provided evidence of abstinence and completion of recovery-related goals, respectively. *Attendance* was defined as joining a scheduled online meeting within 15 min of the agreed start time, as verified by the lead researcher. *Abstinence* was defined as providing financial evidence or corroboration of a significant other that the participant had refrained from gambling across the previous week (Christensen et al., 2018). In this study, the participant opted to provide bank statements as evidence, given that he had not yet confided in their significant other about his addiction. We also measured completion of three *recovery goals* each week (Petry et al., 2001). Goals for each week were selected by the participant, with guidance from the researcher regarding how these could be evidenced (see below).

2.4. Procedure

Treatment comprised an 8-week CM intervention that was offered as an adjunct to therapeutic support provided by an online gambling treatment provider. The intervention was delivered separately to this therapeutic provision during weekly online research meetings with the researcher. The intervention involved providing "study points" that were exchangeable for Amazon e-vouchers contingent on participant demonstration of behaviour targeted for change. One study point was equivalent to £1 in vouchers and were exchangeable once a minimum of £5 in vouchers had been accumulated. Study points were available for *attendance* in research meetings across all eight weeks of treatment, and additional vouchers were available for evidencing *abstinence* and *recovery goal* completion in weeks 3–8. Incentive structure (i.e., starting values, rate of escalation, and total magnitude of incentives) was selected based on schedules employed in relevant studies reviewed by Pfund et al. (2022a; c.f. Carroll et al., 2006; Jones et al., 2001). Prize-bowl contingency management was not considered given its perceived resemblance to gambling (Dorey et al., 2022a).

2.4.1. Contingency management for attendance

In week 1 and 2 of the study, study points were available exclusively for attendance in weekly research meetings (i.e., contingency management for attendance; CM-ATT). Meetings were held on the same day each week and were scheduled with the lead researcher the week prior, based on the work commitments of the participant. Meetings were 30–45 min and proceeded in the same fashion each week: (1) awarding study points for attendance, (2) a general discussion about the previous week, (3) an opportunity to provide evidence of abstinence and recovery goal completion, (4) goal selection for the upcoming week and discussion of strategies for overcoming potential barriers to goal completion,

and (5) study point exchange.

An escalating schedule of incentives for attendance was utilised, such that consecutive attendance in research meetings resulted in a successively higher value of study points becoming available. For each consecutive research meeting attended by the participant, the value of study points available increased by 2.5 (£2.50 in vouchers). However, if the participant failed to attend a research meeting, available incentives would reset to their starting value (10 study points; £10). A breakdown of earnable incentives, assuming targets were evidenced is shown in Table 1. During these first two weeks, no study points were available for evidencing abstinence or recovery goal completion. However, the researcher did acknowledge receipt of evidence with a general praise statement.

Recovery goals were selected from nine life domains: legal (e.g., justice requirements, child custody or access), employment (e.g., training or seeking a new job), housing (e.g., accommodation needs), health (e.g., physical and mental health needs), recovery (e.g., personal or spiritual development), money management (e.g., budgeting, debt management), education (e.g., obtaining further qualifications), recreation (e.g., hobbies and social activities), and relationships (e.g., time with family and friends). Domains were created through review of the extant literature (Iguchi et al., 1997; Petry et al., 2001, 2010) and from steering groups with researchers, clinicians, and individuals with lived experience of gambling-related harm. Examples of goals within each domain were provided by the researcher as part of research meetings, though there was no requirement to select goals from each domain. Instead, the participant was encouraged to select goals they felt would be meaningful for their recovery. Selected goals were defined collaboratively and written on-screen by the researcher using screen share technology.

After each session, the researcher sent the participant an e-mail that denoted the study points and value of vouchers earned to date and detailed the goals set for the coming week. This included information on how goals were to be verified, solutions for potential barriers, and the value of vouchers that would be available for attendance the following week.

2.4.2. Contingency management for attendance, abstinence, and recovery goals

In weeks 3–8, study points continued to be available for attendance, but also became available for evidencing abstinence from gambling (i.e., contingency management for abstinence; CM-ABS), and for evidencing goal completion (i.e., contingency management for recovery goals; CM-RG). Incentives available for these outcomes were discussed with the participant in the week prior and were also detailed in a follow-up email. In week 3, 10 study points (£10) were available for evidencing abstinence, and five points were available for evidencing each of the three

Table 1
Incentives schedule for attendance, abstinence, and recovery goal completion.

Week	Attendance Rate (£)	Recovery goal			Abstinence		Total
		Rate per goal (£)	Rate x 3 goals (£)	Bonus (£)	Rate (£)	Bonus	
1	10	n/a	n/a	n/a	n/a	n/a	£10.00
2	12.5	n/a	n/a	n/a	n/a	n/a	£12.50
3	15	5	15	5	10	n/a	£45.00
4	17.5	6.5	19.5	5	15	n/a	£57.00
5	20	8	24	5	20	15	£69.00
6	22.5	9.5	28.5	5	25	n/a	£81.00
7	25	11	33	5	30	n/a	£93.00
8	27.5	12.5	37.5	5	35	15	£105.00
Total	150		157.5	30	135	30	£502.50

Note. A bonus £5 voucher was available for recovery goal completion if all three goals were evidenced in each week. An additional bonus was available for evidencing abstinence across three consecutive weeks.

selected goals (i.e., 15 study points in total; £15). However, like CM procedures for attendance, an escalating schedule of incentives was employed. For each consecutive week of abstinence, an additional 5 study points were available (£5 in vouchers; see Table 1), while an additional 1.5 study points were available per goal for each consecutive week in which at least one recovery goal was completed (i.e., 4.5 points in total; £4.50 in vouchers). A bonus was also available for remaining abstinent across three consecutive weeks (10 study points; £10 in vouchers) and for completing all three recovery goals in each week (5 study points; £5 in vouchers). Study points earned each week were summarised prior to discussion of goals for the following week. Otherwise, procedures within research meetings remained identical to that in weeks 1 and 2. Across the 8-week study, the total value of vouchers available for successfully evidencing all target behaviours was £502.50.

3. Results

Jack earned 481 study points over the course of the study (£481 in vouchers). When incentives were exclusively available for attendance (CM-ATT; weeks 1 and 2), Jack attended both research meetings, but failed to evidence abstinence in the first week (see Fig. 1). However, Jack reported that this failure was due to unforeseen technical issues related to capturing images of his bank statements using his banking app. After discussion within the research meeting, the participant resolved to overcome this by capturing bank statements using a laptop. In week 2, Jack successfully evidenced abstinence using images of bank statements. Recovery goal completion was also variable in the first two weeks, with Jack evidencing completion of two recovery goals in week 1, but all three goals in the second week. The goal for which evidence was not provided involved requesting an email from a lecturer regarding attendance on an educational course. The participant reported that they had opted not to pursue this due to being unable to think of a way to

request this without raising suspicion. Other examples of goals selected in this phase included self-excluding from betting shops, completing an exercise regimen, and attending therapy sessions with the participant's gambling treatment provider.

In weeks 3–8, incentives were available for attendance (CM-ATT), abstinence (CM-ABS), and recovery goal completion (CM-RG). In this phase, Jack continued to attend research meetings promptly and successfully evidenced abstinence each week. In week 3, he also provided additional evidence to verify his abstinence in the first week. However, Jack only completed two of the three assigned recovery goals in weeks 3 and 4. On both occasions, the goals that the participant did not complete related to homework set within counselling sessions with his gambling treatment service provider. These tasks required evidence of daily completion of a thought diary, for which the participant only provided evidence of completion for five of seven days. In the final four weeks, the participant successfully completed all recovery goals. Across this phase, the participant continued to select goals related to maintaining abstinence (e.g., setting up restrictions on bank accounts, homework completion assigned by therapist). However, as the study progressed, the participant expressed concerns about what would happen when the study concluded. As a result, goals were also selected in final weeks that focused on establishing additional avenues of support. This included confiding in a friend, investigating other gambling treatment providers, and joining online gambling support forums. Table 2 shows a representative selection of goals across the study and how they were evidenced.

As shown in Table 3, measures of gambling symptoms changed little (a 1-point reduction on the G-SAS), with larger positive trends detected on the GUS and RIGD. Initial baseline scores on quality-of-life measures were relatively high with no changes observed across domains of the WHOQOL-BREF and only a small positive increase on the *Global Quality of Life Scale*.
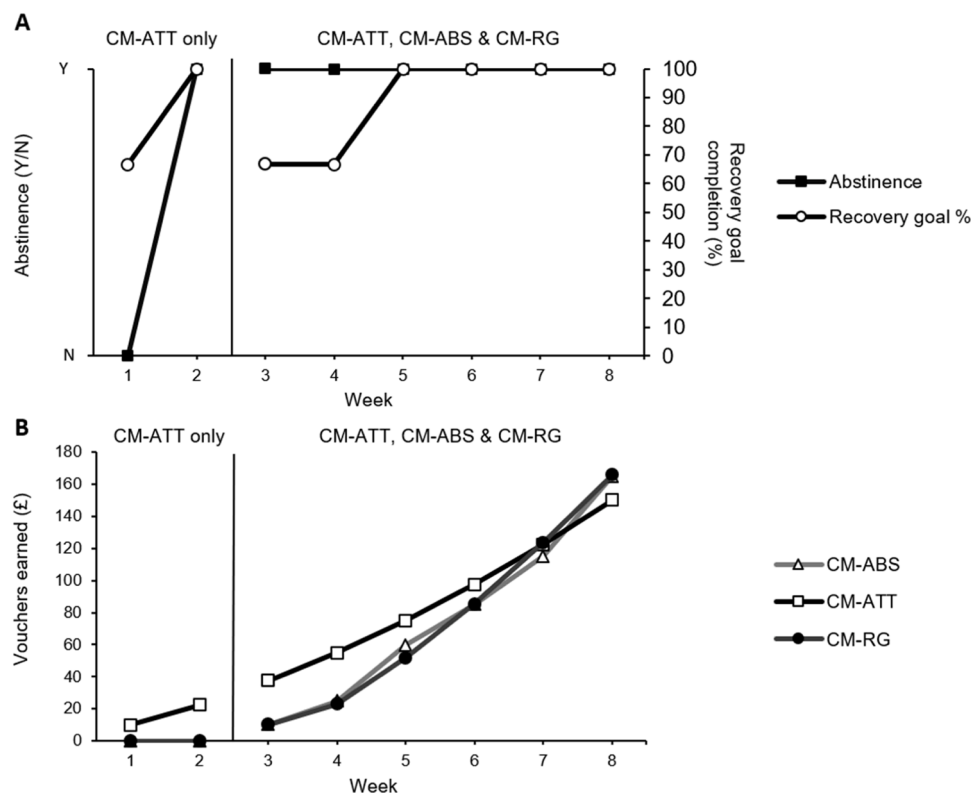

Fig. 1. (A) Abstinence and recovery goal completion and (B) cumulative earnings for each target behaviour across the 8-week study.
Note. Abstinence is shown in closed squares and recovery goal completion is shown by open circles. CM-ATT = contingency management for attendance, CM-ABS = contingency management for abstinence, CM-RG = contingency management for recovery goal completion. Earnings for CM-ATT is shown in open triangles, CM-ATT in open squares, and CM-RG in closed circles.

Table 2
Example recovery goals and evidence requirements.

Recovery goal	Life domain	Evidence
Attend appointment with gambling treatment service provider	Health	Present e-mail from therapist corroborating attendance
Setting up bank account restrictions	Money management	Video of completing process and confirmation
Self-exclude from betting shops	Recovery	Email confirmation
Complete exercise regimen	Recreation	Screenshots of Strava™ app and geolocation for gym attendance
Complete daily thought diary	Health	Timestamped screenshots of diary completion
Setting up a savings account	Money management	Screenshot of email verification and of standing order
Research additional avenues of therapeutic support	Health & Recovery	Screenshot of research
Confide in a friend	Relationships	Screenshot of email from friend
Participate in online gambling support forums	Relationships & Recovery	Screenshot of account registration and posting

Table 3
Pre- and post-intervention self-report measures.

Measure	Pre-test score	Post-test score
Gambling Symptom Assessment Scale (G-SAS)	16	15
Gambling Urge Scale (GUS)	24	9
Recovery Index for Gambling Disorder (RIGD)	21	41.5
	2.5	8.8
Gambling reduction	2.5	5.6
Urge coping	4	9.2
Recovery wisdom	5	7.2
Life functioning	2	4.5
Interpersonal relationships	5	6.2
Mental health		
Timeline follow-back (TLFB)		
	4	0
Days gambled	-£950	£0
Net expenditure		
World Health Organization Quality of Life (WHOQOL-BREF)	88	88
	50	50
Physical health	75	75
Psychological	75	75
Social relationships		
Environment		
Global Quality of Life Scale	75	80
Service User Survey of Incentives (SUSI)		
		4
Positive beliefs		2.7
Limitations of CM		1.7
Ethical/moral objections		2
Negative side effects		
Client Satisfaction Questionnaire (CSQ-8)		32

The participant was fully satisfied with the CM intervention, while results of the SUSI suggested that the participant agreed with all items categorised as positive beliefs about incentive programmes and disagreed or strongly disagreed with all ethical and moral objections to programmes (Getty et al., 2022). Regarding limitations of CM, the participant disagreed with the statement that behaviour change would only persist whilst incentives were provided but was neutral regarding statements that incentives were not necessary, and that incentives were most useful for short-term purposes. The participant also disagreed with both statements regarding negative side effects (i.e., "Incentives will stop the service user from realising their internal motivation to engage in healthy behaviours" and "Most service users would sell or exchange incentives they receive for cash, and then use the money to engage in gambling").

A post-treatment interview was also conducted with the participant to discuss their experience of the CM intervention. Interview data was transcribed and subjected to an interpretative phenomenological analysis (IPA). Four themes were identified as follows.

3.1. Theme 1: personal attributes, experiences, and circumstances

Jack discussed that his background in the military was relevant to his experience of the contingency management intervention, suggesting requirements to verify abstinence and goal completion felt "natural" and not dissimilar from expectations of him as part of his day-to-day work. Jack also discussed a personal drive to be successful and avoid doing the "bare minimum," which may have led him to make more of an effort and select goals that would challenge himself. An important personal factor was that Jack had not yet confided in his partner about his gambling addiction. As a result, Jack highly valued the fact that meetings were able to be held online and during work time. From a financial perspective, Jack also discussed that his high salary meant that, for him, vouchers were "just treats," and that a failure to achieve his goals "wouldn't massively negatively impact" his situation.

3.2. Theme 2: the client-therapist relationship

Jack discussed that the client-therapist relationship was an integral part of the intervention, and that an understanding and encouraging therapeutic relationship was protective against drop-out in the event of failure. Jack particularly valued the collaborative nature of goal setting, suggesting this resulted in challenging and meaningful goals. Jack also believed that social accountability may have been a more important intervention component than incentives in promoting abstinence, suggesting that even without vouchers he "would still have that urge not to do it, just to be able to prove to you that I hadn't." Jack further discussed that the risk of damaging this therapeutic relationship also prevented him from attempting to falsify evidence.

3.3. Theme 3: the benefits and drawbacks of voucher incentives

Jack viewed vouchers as an additional incentive for maintaining abstinence and completing recovery-related goals each week, stating that vouchers "definitely contributed to me trying harder." When asked about the resemblance of CM procedures to gambling, Jack discussed the irony that the monetary value of vouchers he had earned across the study was equal to the "jackpot of the machines I would go to gamble," particularly given he opted to save up vouchers and receive a larger lumpsum when the study ended. However, he stated that this association with gambling was "not something I've been thinking about constantly throughout the process." When asked about the potential for selling earned vouchers, he stated he "didn't even consider the thought of exchanging it [vouchers] to gamble," and that given his progress over the course of the study it would "seem a waste." He maintained that the only reason he might have considered selling vouchers would have been to pay off debts.

3.4. Theme 4: positive gambling abstinence outcomes and additional benefits

The final theme related to the beneficial outcomes of the contingency management intervention, with Jack describing it as being "ridiculously beneficial for me on many levels." Most important to Jack was his successful abstinence from gambling, which he stated was "100 % related to" the intervention. Jack also relayed views that contingency management complimented his therapy with a gambling treatment service provider and that these treatments felt "directly linked throughout" the study. Further, he stated that "because they both came out of the same initial phone call, it additionally feels like they're all part of one

process." Jack also reported other additional benefits of the intervention, including a better understanding of his finances, reduced debts and anxieties related to his finances, as well as better IT skills gained as part of needing to evidence his abstinence and goal attainment.

4. Discussion

The present study represents the first formal evaluation of a CM intervention for gambling. Schedules of reinforcement were established for three behavioural outcomes: attendance in meetings, evidencing abstinence, and evidencing completion of goals related to recovery from gambling. The participant attended all research meetings, and consistently evidenced abstinence when contingencies were active. When reinforcement for recovery completion was first introduced, the participant only completed two of three goals (weeks 3 and 4), but consistently completed all goals thereafter. In follow-up interviews, the participant reported a perceived a benefit of the CM intervention and fully attributed his successful abstinence across the study period to the approach. These findings suggest that CM procedures were acceptable to the client and can be practicably applied as an adjunct to other therapeutic provision for gambling addiction.

Robust improvements were also observed on the GUS and RIGD post-intervention, but there was little change recorded on quality-of-life measures. This latter finding might be expected, given that scores at baseline on quality-of-life questionnaires were close to the ceiling of the measures, limiting scope for any movement. It is also interesting that very little change was observed on the G-SAS relative to the GUS, given that both ask questions about gambling urges. On closer inspection of the G-SAS, responses to items relating to the frequency of gambling urges and thoughts about gambling corresponded with results of the GUS (i.e., that the participant experienced fewer urges relative to baseline). The lack of change in G-SAS scores overall is accounted for by higher post-intervention scores on Q9 and Q10. These questions asked the participant to estimate "how much tension and/or excitement you believe you would have experienced" shortly before gambling (Q9) and the "excitement and pleasure" they would have experienced after gambling (Q10; Kim et al., 2009). This suggests that anticipation of excitement and pleasure from gambling behaviour had increased from baseline, yet the participant was able to remain abstinent from gambling.

A strength of our procedures was that we incorporated feedback of treatment service providers and those with lived experience, which directly informed aspects of the research design and our general approach (Dorey et al., 2022a). This collaborative approach to intervention development is consistent with the priorities of the Gambling Commission (2019) in developing a national strategy for reducing gambling harm. We also involved the participant in the selection of recovery goals throughout the study. Consultation and co-production of intervention goals with the participant helped ensure goals were individualised and relevant and may have facilitated greater engagement and buy-in (Deci and Ryan, 2008; Pearson, 2012). The validity of this approach was verified in the follow-up interview, with the participant reporting they particularly valued this aspect of our procedures and suggested that the approach allowed the creation of meaningful yet challenging goals. However, it is worth noting that Jack reported a personal drive to challenge himself and was averse to selecting goals that were merely "tick-boxes." This approach may therefore differentially benefit participants with similar characteristics.

Jack's experience of the intervention may have been moderated by his relatively high salary level and the perceived value of the voucher reinforcement. While he did report that the vouchers made him try harder to complete goals, Jack conceded they were essentially "treats." Moreover, Jack later discussed that goal setting and therapist feedback may have been more important mechanisms of behaviour change than the use of incentives alone. A contributing factor to this finding may be Jack's military history of following instructions. Further studies are

needed to evaluate whether rule following history or other relevant trait factors such as impulsive decision making (e.g., delay discounting; Harvanko et al., 2019) impact CM outcomes. Nevertheless, the present findings are consistent with evaluations of CM for SUD suggesting that participant income or socioeconomic status does not impact intervention effectiveness (López-Núñez et al., 2017; Rash et al., 2009; Secades-Villa et al., 2013). Clearly, however, more research is needed on the impact of income and possible interactions with legacy harms caused by gambling such as debt and arrears on response to CM for harmful gambling.

A strength and limitation of our study was that we implemented concurrent schedules of reinforcement for three behavioural outcomes (attendance, abstinence, and recovery goal completion). This allowed the feasibility of delivery and acceptability of procedures to be explored for all three approaches. However, while the schedules appeared efficacious in promoting their respective outcomes, the relative contribution of each schedule to these outcomes is unknown. Within the CM for substance use literature, research suggests that reinforcing attendance alone can have a small effect on abstinence (Pfund et al., 2022a). Equally, there is at least some evidence to suggest that reinforcing completion of recovery related goals can have an independent positive effect on abstinence (Iguchi et al., 1997). Further research is needed to identify the immediate and long-term independent effects of these schedules on recovery from gambling addiction. Given that cost of CM approaches can be prohibitive for service providers (Petry, 2010), identifying the most cost-effective strategy for promoting abstinence may be necessary to encourage wider uptake. However, it is worth noting that the participant reported value in the treatment package, stating that vouchers for attendance, and the process of problem-solving and identifying recovery goals were reasons to attend treatment in themselves. These practices may therefore be important in maximising participant retention, an issue of particular importance for treating those suffering from gambling addiction (Pfund et al., 2021). Reinforcement for attendance and goal completion may also serve to protect the client-therapist relationship in the event of relapse. This consideration may also be relevant to uptake of CM interventions, given that some treatment providers cite potential damage to the therapeutic relationship as an objection to CM (Kirby et al., 2006; Sinclair et al., 2011).

Another potential limitation worth noting is that CM procedures were delivered by the researcher, while additional therapeutic support was independently provided by a gambling treatment service provider. Ideally, these approaches would have been integrated into a comprehensive treatment package and delivered by a single trained service provider. Unfortunately, time and resource constraints did not allow for the recruitment and training of existing service providers. However, an interesting finding was that the participant would often select recovery goals that were related to discussion or homework assigned in sessions with their therapist. The participant also commented at follow-up that they felt the approaches complimented one another very well. Implementing CM independently of therapy may proffer benefits in that the therapeutic process and therapeutic relationship is not affected should the client not meet criteria for that week. However, it is worth acknowledging that the relative contributions of CM procedures cannot be parsed from improvements that may have resulted from therapeutic support the participant received alongside this intervention. While these findings provide additional evidence that CM might be usefully employed as an adjunct to other therapeutic provision, larger scale evaluations are needed to identify the additive benefit of CM procedures.

Despite the value of these findings, an important limitation of this study is the lack of an experimental research design. While a randomised controlled trial was initially anticipated, resource constraints and difficulties in recruitment proved a significant barrier. A recent scoping review revealed relative dearth of psychological interventions of treatment interventions from the UK, which suggest that our difficulties in recruiting participants and implementing research on treatment

interventions were not unique (Seel et al., 2023). These difficulties in recruitment may necessitate the use of alternative research designs, such as the use of single-case experimental designs, that permit causal relationships to be demonstrated using one or a limited number of participants (Kazdin, 2021). Some examples of their use within the extant literature related to gambling include the use of multiple baseline (Hoon and Dymond, 2013), reversal (Costello et al., 2019), alternating treatment (Dixon, 2000), and multiple treatment reversal designs (Bordieri et al., 2008). Such designs have been underused within gambling treatment research, given the advantages they offer in preliminary evaluations of interventions (Dallery et al., 2013), and the growing interest in N-of-1 designs within medicine (Davidson et al., 2021). This study might have been strengthened significantly by incorporating one such design, and by ensuring sufficient data points were collected across phases (Kratochwill et al., 2010). Our study might also have been strengthened by incorporating follow-up procedures, given that a recent systematic review and meta-analysis of CM programmes for substance abuse suggested a long-term benefit on abstinence at 1 year follow-up (Ginley et al., 2021). Further experimental work is therefore needed that evaluates the short- and long-term feasibility and effectiveness of CM approaches for gambling (Christensen et al., 2018).

Nevertheless, this study represents an important first step in evaluating the feasibility of CM procedures as an approach for treating gambling addiction. We found that the remote delivery of procedures via videoconferencing software was both feasible and even favoured by the participant, given that this allowed convenient and private attendance at meetings. However, the participant did experience some initial difficulties in evidencing abstinence, given that some banking applications restrict screen capture of transaction pages for security purposes. While in this case, the participant was successful in identifying alternative means of sharing transaction history (i.e., use of a personal laptop), other participants may not have this luxury. It may also be worth acknowledging the potential for deception in providing evidence of abstinence via the methodology reported in this study. For example, the researcher relied on the participant's honesty in disclosing all bank accounts. It is possible that the participant was able to gamble using bank accounts of which the researcher was unaware. However, in future, there is potential for tech-based solutions to overcome many of these barriers. Open banking initiatives (see Gozman et al., 2018) that allow secure third-party access (with consent) to banking transaction history may present additional avenues for inspecting and verifying abstinence. There may also be scope to gamify CM interventions for gambling using an app-based approach, allowing verification and delivery of incentives to be performed remotely (Dallery et al., 2019; Mitchell et al., 2022). Such an approach has the additional advantage of increasing the reach of interventions to underserved populations that may be in most need of support (Dallery et al., 2023; Satre et al., 2021).

In conclusion, this case study indicates that CM for the treatment of harmful gambling is feasible and that randomised control trials should now be considered. Although treatment gains were clear for attendance, abstinence and recovery-goal completion, further research is necessary to determine whether reinforcing all three target behaviours was both necessary and sufficient for change to occur. Overall, CM for the treatment of harmful gambling has potential both as an adjunct or standalone intervention capable of addressing low levels of treatment retention and promoting long term abstinence from gambling.

CRediT authorship contribution statement

Christopher J. Seel: Writing – original draft, Writing – review & editing, Methodology, Conceptualization, Formal analysis, Investigation, Resources, Visualization. **Hannah Champion:** Writing – review & editing, Visualization, Formal analysis, Data curation. **Lucy Dorey:** Writing – review & editing, Methodology, Conceptualization. **Jack McGarrigle:** Resources, Methodology, Conceptualization. **Darren R. Christensen:** Writing – review & editing, Funding acquisition, Conceptualization. **Richard May:** Writing – review & editing, Methodology, Funding acquisition, Conceptualization. **Alice E. Hoon:** Writing – review & editing, Supervision, Project administration, Methodology, Conceptualization. **Simon Dymond:** Writing – review & editing, Writing – original draft, Supervision, Project administration, Methodology, Funding acquisition, Conceptualization.

Declaration of competing interest

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.psycr.2024.100227.

References

Bijker, R., Booth, N., Merkouris, S.S., Dowling, N.A., Rodda, S.N., 2022. Global prevalence of help-seeking for problem gambling: a systematic review and meta-analysis. Addiction 117 (12), 2972–2985. https://doi.org/10.1111/add.15952.

Bordieri, M., Bordieri, J., Dixon, M.R., 2008. Video golf and gambling: the impact of monetary wagers on performance. Anal. Gambl. Behav. 2 (21), 149–155.

Browne, M., Rawat, V., Greer, N., Langham, E., Rockloff, M., Hanley, C., 2017. What is the harm? Applying a public health methodology to measure the impact of gambling problems and harm on quality of life. J. Gambl. Issues. 36, 28–50, 10.4309/jgi.2017.36.2.

Carroll, K.M., Easton, C.J., Nich, C., Hunkele, K.A., Neavins, T.M., Sinha, R., Rounsaville, B.J., 2006. The use of contingency management and motivational/skills-building therapy to treat young adults with marijuana dependence. J. Consult. Clin. Psychol. 74 (5), 955. https://doi.org/10.1037/0022-006X.74.5.955.

Christensen, D.R., 2013. Contingency management literature review: application to problem gambling counselling. Gambl. Res. 25, 3–17.

Christensen, D.R., Witcher, C.S., Leighton, T., Hudson-Breen, R., Ofori-Dei, S., 2018. Piloting the addition of contingency management to best practice counselling as an adjunct treatment for rural and remote disordered gamblers: study protocol. BMJ Open. 8 (4), e018804.

Costello, M.S., Sheibanee, B.D., Ricketts, A., Hirsh, J.L., Deochand, N., 2019. Exploration of social reinforcement for gambling in single case designs. Anal. Gambl. Behav. 12 (1), 1–20.

Dallery, J., Cassidy, R.N., Raiff, B.R., 2013. Single-case experimental designs to evaluate novel technology-based health interventions. J. Med. Internet Res. 15 (2), e22. https://doi.org/10.2196/jmir.2227.

Dallery, J., Ives, L., Knerr, A., 2023. Toward an era of impact of digital contingency management in the treatment of substance use disorders. Prev. Med., 107518 https://doi.org/10.1016/j.ypmed.2023.107518.

Dallery, J., Raiff, B.R., Grabinski, M.J., Marsch, L.A., 2019. Technology-based contingency management in the treatment of substance-use disorders. Perspect. Behav. Sci. 42, 445–464.

Davidson, K.W., Silverstein, M., Cheung, K., Paluch, R.A., Epstein, L.H., 2021. Experimental designs to optimize treatments for individuals: personalized N-of-1 trials. JAMA Pediatr. 175 (4), 404–409. https://doi.org/10.1001/jamapediatrics.2020.5801.

Davis, D.R., Kurti, A.N., Skelly, J.M., Redner, R., White, T.J., Higgins, S.T., 2016. A review of the literature on contingency management in the treatment of substance use disorders, 2009–2014. Prev. Med. 92, 36–46. https://doi.org/10.1016/j.ypmed.2016.08.008.

Deci, E.L., Ryan, R.M., 2008. Self-determination theory: a macrotheory of human motivation, development, and health. Can. Psychol./Psychologie Canadienne 49 (3), 182. https://psycnet.apa.org/doi/10.1037/a0012801.

Dorey, L., Christensen, D.R., May, R., Hoon, A.E., Dymond, S., 2022a. Gambling treatment service providers' views about contingency management: a thematic analysis. Harm. Reduct. J. 19 (1), 19. https://doi.org/10.1186/s12954-022-00600-0.

Dorey, L., McGarrigle, J., May, R., Hoon, A.E., Dymond, S., 2022b. Client views of contingency management in gambling treatment: a thematic analysis. Int. J. Environ. Res. Public Health 19 (24), 17101. https://doi.org/10.3390/ijerph192417101.

Dixon, M.R. (2000). Manipulating the illusion of control: variations in gambling as a function of perceived control over chance outcomes. *Psycholog. Record,* 50, 705–719. https://doi.org/10.1007/BF03395379.

Gabellini, E., Lucchini, F., Gattoni, M.E., 2023. Prevalence of problem gambling: a meta-analysis of recent empirical research (2016–2022). J. Gambl. Stud. 39 (3), 1027–1057. https://doi.org/10.1007/s10899-022-10180-0.

Gambling Commission, 2019. National Strategy to Reduce Gambling Harms. https://www.reducinggamblingharms.org/asset-library/national-strategy-to-reduce-gambling-harms.pdf.

Getty, C.A., Weaver, T., Lynskey, M., Kirby, K.C., Dallery, J., Metrebian, N., 2022. Patients' beliefs towards contingency management: target behaviours, incentives and the remote application of these interventions. Drug Alcohol Rev. 41 (1), 96–105. https://doi.org/10.1111/dar.13314.

Ginley, M.K., Pfund, R.A., Rash, C.J., Zajac, K., 2021. Long-term efficacy of contingency management treatment based on objective indicators of abstinence from illicit substance use up to 1 year following treatment: a meta-analysis. J. Consult. Clin. Psychol. 89 (1), 58. https://psycnet.apa.org/doi/10.1037/ccp0000552.

Goodwin, B.C., Browne, M., Rockloff, M., Rose, J., 2017. A typical problem gambler affects six others. Int. Gambl. Stud. 17 (2), 276–289. https://doi.org/10.1080/14459795.2017.1331252.

Gozman, D., Hedman, J., Olsen, K.S., 2018. Open banking: emergent roles, risks & opportunities. Res. Paper. 183, 1–15.

Harvanko, A.M., Strickland, J.C., Slone, S.A., Shelton, B.J., Reynolds, B.A., 2019. Dimensions of impulsive behavior: predicting contingency management treatment outcomes for adolescent smokers. Addict. Behav. 90, 334–340, 10.1016%2Fj.addbeh.2018.11.031.

Hodgins, D.C., Makarchuk, K., 2003. Trusting problem gamblers: reliability and validity of self-reported gambling behavior. Psychol. Addict. Behav. 17 (3), 244–248. https://doi.org/10.1037/0893-164X.17.3.244.

Hoon, A.E., Dymond, S., 2013. Altering preferences for concurrently available simulated slot machines: nonarbitrary contextual control over gambling choice. Anal. Gambl. Behav. 7 (1), 1–18.

Iguchi, M.Y., Belding, M.A., Morral, A.R., Lamb, R.J., Husband, S.D., 1997. Reinforcing operants other than abstinence in drug abuse treatment: an effective alternative for reducing drug use. J. Consult. Clin. Psychol. 65 (3), 421. https://psycnet.apa.org/doi/10.1037/0022-006X.65.3.421.

Johnstone, P., Regan, M., 2020. Gambling harm is everybody's business: a public health approach and call to action. Public Health 184, 63–66. https://doi.org/10.1016/j.puhe.2020.06.010.

Jones, H.E., Haug, N., Silverman, K., Stitzer, M., Svikis, D., 2001. The effectiveness of incentives in enhancing treatment attendance and drug abstinence in methadone-maintained pregnant women. Drug Alcohol Depend. 61 (3), 297–306. https://doi.org/10.1016/S0376-8716(00)00152-6.

Kazdin, A.E., 2021. Single-case experimental designs: characteristics, changes, and challenges. J. Exp. Anal. Behav. 115 (1), 56–85. https://doi.org/10.1002/jeab.638.

Kirby, K.C., Benishek, L.A., Dugosh, K.L., Kerwin, M.E., 2006. Substance abuse treatment providers' beliefs and objections regarding contingency management: implications for dissemination. Drug Alcohol Depend. 85 (1), 19–27. https://doi.org/10.1016/j.drugalcdep.2006.03.010.

Kim, S.W., Grant, J.E., Potenza, M.N., Blanco, C., Hollander, E., 2009. The Gambling Symptom Assessment Scale (G-SAS): a reliability and validity study. Psychiatry Res. 166 (1), 76–84. https://doi.org/10.1016/j.psychres.2007.11.008.

Kratochwill, T.R., Hitchcock, J., Horner, R.H., Levin, J.R., Odom, S.L., Rindskopf, D.M., Shadish, W.R., 2010. Single-Case Designs Technical Documentation. https://ies.ed.gov/ncee/WWC/Docs/ReferenceResources/wwc_scd.pdf.

Kristensen, J.H., Pallesen, S., Bauer, J., Leino, T., Griffiths, M.D., Erevik, E.K., 2023. Suicidality among individuals with gambling problems: a meta-analytic literature review. Psychol. Bull. https://doi.org/10.1037/bul0000411.

Larsen, D.L., Attkisson, C.C., Hargreaves, W.A., Nguyen, T.D., 1979. Assessment of client/patient satisfaction: development of a general scale. Eval. Program Plann. 2 (3), 197–207. https://doi.org/10.1016/0149-7189(79)90094-6.

López-Núñez, C., Dorey, L., Secades-Villa, R., Peña-Suárez, E., Fernández-Artamendi, S., Weidberg, S., 2017. Income levels and response to contingency management for smoking cessation. Subst. Use Misuse 52 (7), 875–883, 10.1080/10826084.2016.1264973.

McGarrigle, J., Dorey, L., Christensen, D., May, R., Hoon, A.E., Dymond, S., 2023. ConGam-PS: developing and evaluating a measurement tool of treatment providers' views about contingency management for gambling. Addict. Res. Theory. 1–10. https://doi.org/10.1080/16066359.2023.2247978.

Mitchell, J.T., Burns, C.M., Atkinson, B., Cottrell, M., Frye, J.K., McKellar, M.S., Okeke, N.L., 2022. Feasibility, acceptability, and preliminary efficacy of a gamified

mobile health contingency management intervention for PrEP adherence among Black MSM. AIDS Behav. 26 (10), 3311–3324. https://doi.org/10.1007/s10461-022-03675-9.

Morasco, B.J., Pietrzak, R.H., Blanco, C., Grant, B.F., Hasin, D., Petry, N.M., 2006. Health problems and medical utilization associated with gambling disorders: results from the National Epidemiologic Survey on Alcohol and Related Conditions. Psychosom. Med. 68 (6), 976–984. https://doi.org/10.1097/01.psy.0000238466.76172.cd.

Pearson, E.S., 2012. Goal setting as a health behavior change strategy in overweight and obese adults: a systematic literature review examining intervention components. Patient. Educ. Couns. 87 (1), 32–42. https://doi.org/10.1016/j.pec.2011.07.018.

Petry, N.M., 2000. A comprehensive guide to the application of contingency management procedures in clinical settings. Drug Alcohol Depend. 58 (1–2), 9–25. https://doi.org/10.1016/S0376-8716(99)00071-X.

Petry, N.M, 2010. Contingency management treatments: controversies and challenges. Addiction 105 (9), 1507–1509. https://doi.org/10.1111/j.1360-0443.2009.02879.x.

Petry, N.M., 2013. Contingency Management For Substance Abuse treatment: A guide to Implementing This Evidence-Based Practice. Routledge.

Petry, N.M., Alessi, S.M., Carroll, K.M., Hanson, T., MacKinnon, S., Rounsaville, B., Sierra, S., 2006. Contingency management treatments: Reinforcing abstinence versus adherence with goal-related activities. J. Consult. Clin. Psychol. 74 (3), 592. https://doi.org/10.1037/0022-006X.74.3.592.

Petry, N.M., Tedford, J., Martin, B., 2001. Reinforcing compliance with non-drug–related activities. J. Subst. Abuse Treat. 20 (1), 33–44. https://doi.org/10.1016/S0740-5472(00)00143-4.

Petry, N.M., Weinstock, J., Alessi, S.M., Lewis, M.W., Dieckhaus, K., 2010. Group-based randomized trial of contingencies for health and abstinence in HIV patients. J. Consult. Clin. Psychol. 78 (1), 89. https://doi.org/10.1037/a0016778.

Pfund, R.A., Forman, D.P., Whalen, S.K., Zech, J.M., Ginley, M.K., Peter, S.C., Whelan, J. P., 2023a. Effect of cognitive-behavioral techniques for problem gambling and gambling disorder: a systematic review and meta-analysis. Addiction 118 (9), 1661–1674. https://doi.org/10.1111/add.16221.

Pfund, R.A., Ginley, M.K., Kim, H.S., Boness, C.L., Horn, T.L., Whelan, J.P., 2023b. Cognitive-behavioral treatment for gambling harm: umbrella review and meta-analysis. Clin. Psychol. Rev., 102336 https://doi.org/10.1016/j.cpr.2023.102336.

Pfund, R.A., Ginley, M.K., Boness, C.L., Rash, C.J., Zajac, K., Witkiewitz, K., 2022a. Contingency management for drug use disorders: meta-analysis and application of Tolin's criteria. Clin. Psychol.: Sci. Pract. https://psycnet.apa.org/doi/10.1037/cps0000121.

Pfund, R.A., Ginley, M.K., Rash, C.J., Zajac, K., 2022b. Contingency management for treatment attendance: a meta-analysis. J. Subst. Abuse Treat. 133, 108556 https://doi.org/10.1016/j.jsat.2021.108556.

Pfund, R.A., Peter, S.C., McAfee, N.W., Ginley, M.K., Whelan, J.P., Meyers, A.W., 2021. Dropout from face-to-face, multi-session psychological treatments for problem and disordered gambling: a systematic review and meta-analysis. Psychol. Addict. Behav. 35 (8), 901, 10.1037/adb0000710.

Pfund, R.A., Peter, S.C., Whelan, J.P., Meyers, A.W., Ginley, M.K., Relyea, G., 2020. Is more better? A meta-analysis of dose and efficacy in face-to-face psychological treatments for problem and disordered gambling. Psychol. Addict. Behav. 34 (5), 557. https://doi.org/10.1037/adb0000560.

Pickering, D., Blaszczynski, A., Gainsbury, S.M., 2021. Development and psychometric evaluation of the Recovery Index for Gambling Disorder (RIGD). Psychol. Addict. Behav. 35 (4), 472. https://psycnet.apa.org/doi/10.1037/adb0000676.

Rash, C.J., Olmstead, T.A., Petry, N.M., 2009. Income does not affect response to contingency management treatments among community substance abuse treatment-seekers. Drug Alcohol Depend. 104 (3), 249–253. https://doi.org/10.1016/j.drugalcdep.2009.05.018.

Raylu, N., Oei, T.P., 2004. The gambling urge scale: development, confirmatory factor validation, and psychometric properties. Psychol. Addict. Behav. 18 (2), 100. https://psycnet.apa.org/doi/10.1037/0893-164X.18.2.100.

Satre, D.D., Meacham, M.C., Asarnow, L.D., Fisher, W.S., Fortuna, L.R., Iturralde, E., 2021. Opportunities to integrate mobile app–based interventions into mental health and substance use disorder treatment services in the wake of COVID-19. Am. J. Health Promot. 35 (8), 1178–1183. https://doi.org/10.1177/08901171211055314.

Secades-Villa, R., García-Fernández, G., Peña-Suárez, E., García-Rodríguez, O., Sánchez-Hervás, E., Fernández-Hermida, J.R., 2013. Contingency management is effective across cocaine-dependent outpatients with different socioeconomic status. J. Subst. Abuse Treat. 44 (3), 349–354. https://doi.org/10.1016/j.jsat.2012.08.018.

Seel, C.J., Jones, M., Christensen, D.R., May, R.J., Hoon, A.E., Dymond, S., 2023. Treatment of gambling: A scoping Review of United Kingdom-Based Intervention Research. School of Psychology, Swansea University [Manuscript submitted for publication].

Sinclair, J.M.A., Burton, A., Ashcroft, R., Priebe, S., 2011. Clinician and service user perceptions of implementing contingency management: a focus group study. Drug Alcohol Depend. 119 (1–2), 56–63. https://doi.org/10.1016/j.drugalcdep.2011.05.016.

WHOQOL Group, 1998. Development of the World Health Organization WHOQOL-BREF quality of life assessment. Psychol. Med. 28 (3), 551–558. https://doi.org/10.1017/S0033291798006667.

Yakovenko, I., Quigley, L., Hemmelgarn, B.R., Hodgins, D.C., Ronksley, P., 2015. The efficacy of motivational interviewing for disordered gambling: systematic review and meta-analysis. Addict. Behav. 43, 72–82. https://doi.org/10.1016/j.addbeh.2014.12.011.