



## Pilot randomized controlled trial of an online intervention for problem gamblers



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### ABSTRACT

**Introduction:** This pilot randomized controlled trial sought to evaluate whether an online intervention for problem gambling could lead to improved gambling outcomes compared to a no intervention control. Participants were recruited through a crowdsourcing platform.

**Methods:** Participants were recruited to complete an online survey about their gambling through the Mechanical Turk platform. Those who scored 5 or more on the Problem Gambling Severity Index and were thinking about quitting or reducing their gambling were invited to complete 6-week and 6-month follow-ups. Each potential participant who agreed was sent a unique password. Participants who used their password to log onto the study portal were randomized to either access an online intervention for gambling or to a no intervention control.

**Results:** A total of 321 participants were recruited, of which 87% and 88% were followed-up at 6 weeks and 6 months, respectively. Outcome analyses revealed that, while there were reductions in gambling from baseline to follow-ups, there was no significant observable impact of the online gambling intervention, as compared to a no intervention control condition.

**Conclusions:** While the current trial observed no impact of the intervention, replication is merited with a larger sample size, and with participants who are not recruited through a crowdsourcing platform.

Trial registration: [ClinicalTrials.gov NCT03124589](https://clinicaltrials.gov/ct2/show/study/NCT03124589)

### 1. Introduction

There are a number of challenges to providing adequate services for problem gamblers. Primarily, the large majority do not access traditional treatment services or Gamblers Anonymous for help with their concerns (as much as 94%) (Cunningham, 2005; Suurvali, Hodgins, Toneatto, & Cunningham, 2008). There are a number of reasons for this, including a lack of availability (particularly outside of urban areas), concerns about stigma, and a desire for self-reliance (Slutske, 2006; Suurvali, Hodgins, Toneatto, & Cunningham, 2012). There is, however, considerable interest among problem gamblers in alternate options for care, including Internet interventions (Cunningham, Hodgins, & Toneatto, 2008).

There has been little published work to-date investigating the efficacy of online interventions for problem gamblers, both with and without therapist assistance. A Swedish randomized controlled trial (RCT) examined the impact of an Internet-delivered intervention with

therapist assistance in a small sample of pathological gamblers, finding some impact of the intervention compared to a wait list control at 8-week follow-up (Carlbring & Smit, 2008). While promising, this intervention merits systematic replication to confirm the results. This is because the use of a waiting list control design which, when implemented in a way that those in the waiting list condition are told that they will have to wait for the intervention, can act as a confound to interpreting the results (note: wording of the waiting list manipulation in the Carlbring et al. trial is not stated in the publication) (Cunningham, Kypri, & McCambridge, 2013).

Two further RCTs evaluated a personalized feedback intervention for gambling that is available online (Cunningham, Hodgins, & Toneatto, 2011). However, while both trials demonstrated some minor impact of the intervention on reducing problem gambling, neither trial had participants access the intervention directly through an online portal. Instead, the final personalized report was generated by the researchers and sent by mail to the participants (Cunningham, Hodgins,

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Toneatto, & Murphy, 2012; Cunningham, Hodgins, Toneatto, Rai, & Cordingley, 2009). Further, the second trial demonstrated that it was unclear what component of the intervention might have had an impact (Cunningham et al., 2012). As such, these trials can only be taken as limited support for the possibilities of online interventions for problem gamblers.

Luquiens et al. (2016) examined the impact of personalized feedback, Internet-based cognitive behavioural therapy (iCBT), or a therapist-assisted iCBT on problem gamblers (Luquiens et al., 2016). While the study had the strength of using naturalistic recruitment from an online gambling website, it suffered from very high attrition rates (83%) and was unable to demonstrate an impact of the interventions on gambling outcomes. Casey et al. (Casey et al., 2017) compared an iCBT program to an active monitoring online control condition, and to a waitlist control. Both the iCBT and the active control showed improved gambling outcomes compared to the waitlist control at a 6-week follow-up. Also encouraging, the iCBT condition demonstrated some superiority to the active control at 6 weeks (Casey et al., 2017). Finally, Hodgins et al. have translated a paper and pencil self-help intervention into an online format (Diskin & Hodgins, 2009; Hodgins, Currie, Currie, & Fick, 2009; Hodgins, Currie, & el-Guebaly, 2001; Hodgins, Fick, Murray, & Cunningham, 2013). An RCT was unable to demonstrate an increased impact of this online intervention in comparison to a personalized feedback intervention (Hodgins, Cunningham, Murray, and Hagopian, in press). A separate trial, which employed a separately programmed version of these same self-help booklets, compared the benefits of providing the online gambling with or without a companion mental health intervention among participants with co-occurring mental health distress and problem gambling (Cunningham et al., 2016). However, the purpose (and design) of this trial was not to provide evidence of the efficacy of the gambling intervention. Similarly, while an RCT employing a waiting list design found that providing an online intervention for depression led to improvements in gambling outcomes compared to those told they would have to wait for 8 weeks, the trial did not examine the possible impact of an online intervention targeting problem gambling (Bucker, Bierbrodt, Hand, Wittekind, & Moritz, 2018).

Given the limited evidence base for online problem gambling interventions, further research in this area is merited. The present pilot RCT employed a crowdsourcing website as a quick and inexpensive method of recruiting participants for an RCT evaluating the impact of the online gambling intervention developed by Hodgins and colleagues (Hodgins et al., 2013) and compared it to a no intervention control. While there are limitations associated with employing a sample recruited from Mechanical Turk (the crowdsourcing website) for this purpose (Cunningham, Godinho, & Kushnir, 2017a, 2017b), the results have value given the dearth of research in this area (although there are other trials with published protocols ongoing, e.g., (Merkouris et al., 2017)). It was hypothesized that the gambling intervention would lead to improved gambling outcomes at a 6-week and 6-month follow-up compared to participants in the no intervention control group.

## 2. Methods

### 2.1. Recruitment

Conduct of the trial was approved by the standing research ethics board of the Centre for Addiction and Mental Health. Participants were recruited from the United States and Canada using an advertisement asking them to take part in a survey about their gambling that was posted on the Mechanical Turk website. Potential participants filled in a brief eligibility survey (18 or over, gambled weekly or more often). Following recommendations for the conduct of research using Mechanical Turk, only participants who had completed at least 100 jobs on the platform, with a quality rating of 95% or higher, were shown the advertisement (Peer, Vosgerau, & Acquisti, 2014). Those found eligible

were sent to an online consent form. Eligible participants were told that they would be asked to complete a survey about their gambling as well as other information about themselves. They were further told that the survey would take < 15 min and that they would be paid US\$1.50 for completion. Finally, participants were told that some people would be asked if they were interested in participating in another study but that we did not know at this point whether they would be asked. Those not eligible were thanked for their interest. It is important to note that the eligibility screener was set up to dissuade Mechanical Turk workers from using automated programs to complete the survey, and so that it could only be completed once for each Mechanical Turk account. More specifically, Mechanical Turk has some controls in place to make it challenging for one person to have more than one account such as requiring SSN data for each user registration. In addition, Mechanical Turk worker IDs were captured using HTML coding, and users attempting the survey more than once were not included in the study. Lastly, participants could only receive compensation for survey completion if codes provided at the end of the survey (via a third party survey software) were manually entered in to Mechanical Turk platform; codes were then visually inspected for each participant by study staff.

The online survey included four attention check questions nested within other items. Respondents who answered all four attention check questions correctly, said that they had provided accurate responses, who scored 5 or more on the Problem Gambling Severity Index (PGSI) indicating current moderate/problem gambling (Currie, Hodgins, & Casey, 2013; Ferris & Wynne, 2001), and who stated that they were thinking about cutting down or quitting their gambling, were invited to take part in a study in which they would be asked to complete two additional surveys (6 weeks survey for a US\$5 payment; 6-month survey for a US\$10 payment). In addition, participants were told that they would be sent an email with a link and password to log into a website containing information about gambling. Further, they were told that the type of material they would access would be entirely by chance. Finally, participants were told that only those who used the password to access the website would be sent the follow-up surveys.

### 2.2. Randomization, experimental conditions and follow-up

Participants who agreed to the follow-up study were sent a link and a password (unique password for each participant) to log onto the study website. Those logging on were randomized (1:1 ratio with no stratification) to receive their respective materials. Those assigned to the intervention condition were provided with the online intervention developed from the Hodgins self-help booklets (Diskin & Hodgins, 2009; Hodgins et al., 2001; Hodgins et al., 2009; Hodgins et al., 2013). Those assigned to the control condition were provided a brief survey asking what types of tools they might find helpful in a website designed to help problem gamblers deal with their gambling concerns.

### 2.3. Sample size estimate

The power analysis was conducted based on the findings of earlier work conducted by Hodgins et al. employing the paper and pencil version of this same intervention (Hodgins et al., 2001; Hodgins et al., 2009). Using the specifications of an alpha of 0.05, a power of 0.80, and a correlation of 0.5 between baseline and follow-up on the outcome variable, number of days gambled in the last month, a sample of 112 participants per condition was needed to detect a differential impact of the intervention of 2 days per month compared to the control condition at the 6-month follow-up. A 20% attrition rate was allowed for, leading to a targeted sample size of 280 participants.

2.4. Data analysis

2.4.1. Outcome variables

The primary outcome variable was the past 3 month version of the NORC DSM-IV Screen for Gambling Problems (NODS; measured at baseline and 6-month follow-up) which indicates DSM-IV gambling severity (Toce-Gerstein & Volberg, 2004; Wulfert et al., 2005). The secondary outcome variables, number of days gambled in the last 30 and the Gambling Symptom Assessment Scale (G-SAS) (Kim, Grant, Potenza, Blanco, & Hollander, 2009) were measured at baseline, 6 weeks and 6-months.

2.4.2. Analysis plan

Bivariate comparisons of baseline demographic and outcome variables were conducted. Outcome analyses employed mixed effect repeated measures outcomes, and used all available data for each time point. Overall, 3 separate mixed-effect models were conducted to examine the effect of time, intervention condition, and the time by intervention condition on each outcome variable. Missing data were analyzed using a maximum likelihood approach.

3. Results

Fig. 1 provides a consort chart for the trial. A total of 321 (318 from the United States; 3 from Canada) eligible participants logged onto the website and were randomized to condition. The average (SD) age was 36.5 (10.9), 44.9% were male, 69.2% had some post-secondary

education, 71.7% were full-time employed, 49.5% were married/common law, 17.8% reported a family income less than \$20,000, and 78.5% were Caucasian. At baseline, the mean (SD) PGSI score was 11.5 (5.0) and participants reported gambling an average (SD) of 16.5 (8.5) days in the past 30 days. Approximately half of the participants (48.3%) stated that they had ever accessed help for their gambling. The primary gambling concerns voiced by this sample were instant or scratch tickets (66.7%), slot machines (54.2%), lottery-type games (51.4%) and casino games (31.5%). Bivariate comparisons found no significant differences between intervention and control conditions ( $p > 0.05$ ), with the exception of a reported family income of less than \$20,000 (23.5% control condition; 11.3% intervention condition;  $p = 0.004$ ).

Follow-up rates were excellent (86.6% at 6-weeks) and 87.9% at 6-months. Caution should be taken in interpreting the 6-months follow-up results as differences in follow-up rates approached significance (84.1% intervention condition; 91.2% control condition;  $p = 0.053$ ).

Mixed effect models revealed that the sample as a whole experienced significant and consistent reductions in gambling symptoms and severity across time (see Table 1 for the estimated marginal means from these analyses, and Tables 2 and 3 for the results on the mixed effects models). In particular, the sample experienced significant reductions in GSAS scores (6-weeks, 6 months;  $p < 0.001$ ) and the number of days gambled in the past 30 days (6-weeks, 6 months;  $p < 0.001$ ). However, a significant time by intervention interaction was not observed, indicating that the intervention and control groups did not significantly differ across time in the level of reduction (GSAS  $p = 0.695$ , number of days gambled  $p = 0.403$ ). Similarly, the entire sample also experienced

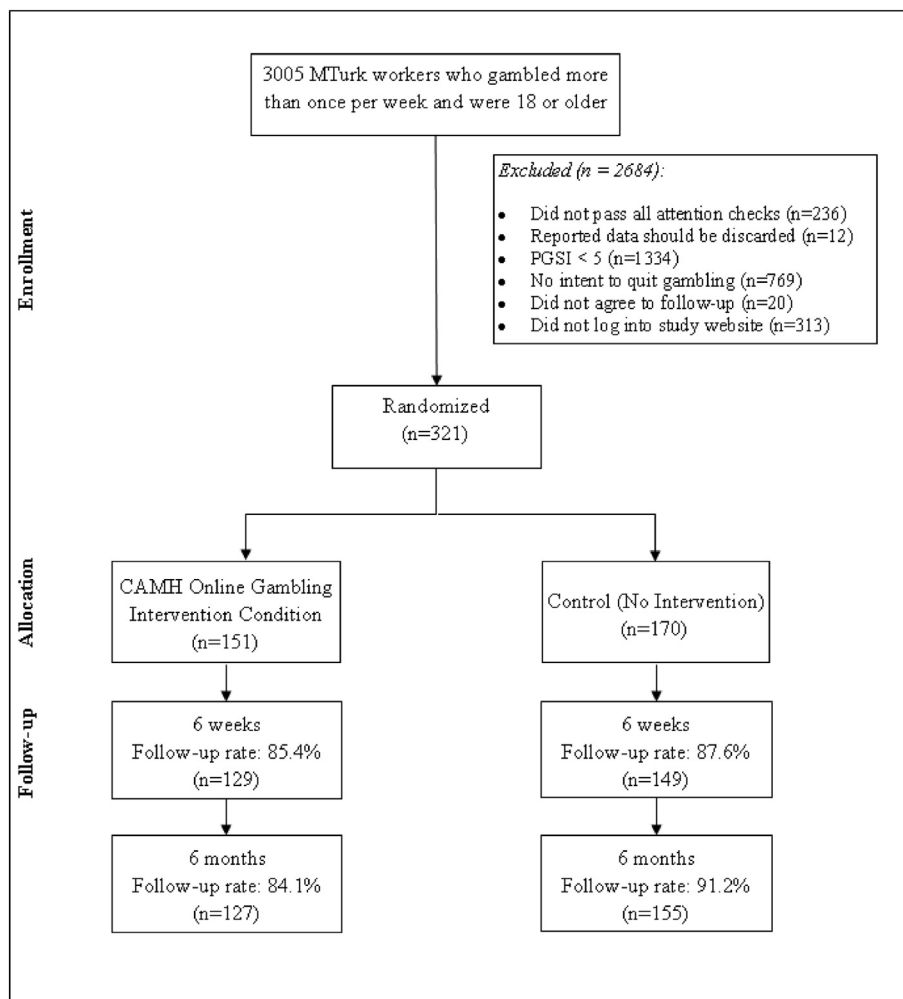


Fig. 1. Trial consort diagram.

**Table 1**  
Outcome variable means by time and intervention.

Time	Randomization	Mean (SE) <sup>a</sup>		
		GSAS	# days gambled in past 30	NODS
Baseline	Control	8.21 (0.23)	15.71 (0.60)	5.35 (0.21)
	Intervention	8.26 (0.24)	17.41 (0.64)	5.13 (0.22)
6 weeks	Control	6.82 (0.24)	9.12 (0.63)	–
	Intervention	7.16 (0.26)	9.71 (0.68)	–
6 months	Control	6.05 (0.24)	7.09 (0.62)	3.86 (0.22)
	Intervention	6.19 (0.26)	7.86 (0.68)	4.18 (0.24)

Note: SE – Standard Error.

GSAS – Gambling Symptom Assessment Scale.

NODS - NORC DSM-IV Screen for Gambling Problems.

<sup>a</sup> Mean represents estimated marginal means obtained from the mixed effects models reported in Tables 1 and 2.

**Table 2**  
Mixed-effect models results of time, intervention, and time by intervention interaction on GSAS scores and the number of days gambled in the past 30.

Effect	GSAS			# days gambled in past 30		
	Estimate ± SE	t	p	Estimate ± SE	t	p
Intercept	8.25 ± 0.24	33.84	< 0.001	17.41 ± 0.64	27.22	< 0.001
Time (Ref: Baseline)						
6 weeks	–1.10 ± 0.25	–4.37	< 0.001	–7.71 ± 0.66	–11.65	< 0.001
6 months	–2.07 ± 0.25	–8.21	< 0.001	–9.55 ± 0.66	–14.41	< 0.001
Condition (Ref: Intervention condition)	–0.05 ± 0.34	–0.16	0.876	–1.70 ± 0.88	–1.94	0.053
		F	p		F	p
Time × intervention (Ref: Baseline × intervention condition)		0.365	0.695		0.911	0.403

Note: GSAS – Gambling Symptom Assessment Scale.

SE: Standard Error.

**Table 3**  
Mixed-effect models results of time, intervention, and time by intervention interaction on NODS.

Effect	NODS		
	Estimate ± SE	t	p
Intercept	5.13 ± 0.22	23.14	< 0.001
Time (Ref: Baseline)			
6 months	–0.95 ± 0.24	–3.99	< 0.001
Condition (Ref: Intervention)	–0.21 ± 0.30	0.70	0.482
		F	p
Time × intervention (Ref: Baseline × intervention condition)		2.799	0.095

Note: NODS - NORC DSM-IV Screen for Gambling Problems.

SE: Standard Error.

significant reductions in NODS scores from baseline to the 6-month follow-up ( $p < 0.001$ ), however no significant time by intervention interaction was observed ( $p = 0.095$ ).

Use of the intervention among those in the intervention condition was minimal. While 62.9% of participants accessed the initial gambling quiz in the online intervention (i.e., the PGSI), only 42.4% completed it. A total of 13.9% completed at least 1 of 15 different gambling self-help tools and 8.6% completed the ‘Monitor your Gambling Urges’ tool (but only 2.0% viewed the report generated). Only 8.6% logged into the intervention more than once.

#### 4. Discussion

This pilot study sought to provide preliminary evidence of the efficacy of an online intervention for problem gamblers. Participants in both the intervention and control conditions reduced their gambling from baseline to follow-up. However, the study was unable to demonstrate an impact of providing access to the intervention on

improvements in gambling over and above the reductions observed in the control group.

While the study had a number of strong features - a good follow-up rate and the inclusion of a no intervention control condition - it may be too early to conclude that the intervention under study is ineffective, despite these negative results. This is primarily due to the use of participants recruited through Mechanical Turk for the trial. This study is the fifth of a series of pilot RCTs employing this crowdsourcing platform to recruit participants for intervention research conducted by this group. Of the other four trials (all targeting unhealthy alcohol use), 2 of the 4 were able to demonstrate some small impact of the intervention under study (Bertholet, Godinho, & Cunningham, 2019; Cunningham et al., 2017a, 2017b; Cunningham, Godinho, and Bertholet, under review). However, all the trials, including the current one, suffered from difficulties with getting participants to engage with the intervention. In the present study, only 9% of participants logged into the intervention more than once, indicating a very limited amount of use. Future research should evaluate strategies for improving participant engagement with online interventions conducted on Mechanical Turk before interventions can be reliably evaluated using these samples.

More troubling, the other RCT conducted to evaluate this same intervention (in which the intervention was compared to a brief personalized feedback control) also failed to demonstrate an impact of the intervention (Hodgins et al., in press). Common to both of these RCTs has been the powering of the trial based on the assumption of a medium effect size. While the paper and pencil version of these same materials, when combined with telephone-based therapist support, demonstrated this strength of effect, it is possible that the online version should be tested based on the assumption of a small effect size (as is the case for other online interventions targeting addictive behaviors when provided without any therapist support) (Riper et al., 2014). Also relevant, is that the present study proactively recruited participants, while in the Hodgins et al. RCT of the same intervention, participants responded to an advertisement asking for people concerned about their gambling. It is



possible that mode of recruitment will also need to be considered when evaluating research trials (as well as have an implication on the degree of impact of the intervention).

One conclusion of the need to power for a small effect size when evaluating this intervention could be that online versions of materials are less impactful than their equivalent paper and pencil versions. While this is possible, just as likely an explanation is that it was the therapist support that was instrumental in driving the size of the improvements in the earlier paper and pencil intervention materials studies (Hodgins et al., 2001; Hodgins et al., 2009). Alternatively, online trials may be attracting a different segment of the problem gambling population who then engage with the materials in a different way. Or, materials that are optimized for paper and pencil viewing may require more extensive work to be translated into a form that will have an optimum impact in an online format. Whatever the reasons, online interventions appear an attractive medium for problem gamblers seeking help. As such, more research is merited to attempt to develop effective interventions to address this unmet need.

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### Contributions

JAC, AG, and DH designed the study. AG conducted the study and the data analyses. JAC wrote the first draft of the manuscript. All authors contributed to and approved the final manuscript.

### Conflict of interest

The authors have no conflicts of interest to declare.

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### References

- Bertholet, N., Godinho, A., & Cunningham, J. A. (2019). Smartphone application for unhealthy alcohol use: Pilot randomized controlled trial in the general population. *Drug and Alcohol Dependence*, 195, 101–105.
- Bucker, L., Bierbrodt, J., Hand, I., Wittekind, C., & Moritz, S. (2018). Effects of a depression-focused internet intervention in slot machine gamblers: A randomized controlled trial. *PLoS One*, 13(6), e0198859. <https://doi.org/10.1371/journal.pone.0198859>.
- Carlbring, P., & Smit, F. (2008). Randomized trial of internet-delivered self-help with telephone support for pathological gamblers. *Journal of Consulting and Clinical Psychology*, 76(6), 1090–1094.
- Casey, L. M., Oei, T. P., Raylu, N., Horrigan, K., Day, J., Ireland, M., & Clough, B. A. (2017). Internet-based delivery of cognitive behaviour therapy compared to monitoring, feedback and support for problem gambling: A randomised controlled trial. *Journal of Gambling Studies*. <https://doi.org/10.1007/s10899-016-9666-y>.
- Cunningham, J. A. (2005). Little use of treatment among problem gamblers. *Psychiatric Services*, 56(8), 1024–1025. <https://doi.org/10.1176/Appi.Ps.56.8.1024-A>.
- Cunningham, J. A., Godinho, A., & Bertholet, N. (2019). Outcomes of two randomized controlled trials, employing participants recruited through Mechanical Turk, of internet interventions targeting unhealthy alcohol use. (under review).
- Cunningham, J. A., Godinho, A., & Kushnir, V. (2017a). Can Amazon's Mechanical Turk be used to recruit participants for internet intervention trials? A pilot study involving a randomized controlled trial of a brief online intervention for hazardous alcohol use. *Internet Interventions*, 10, 12–16.
- Cunningham, J. A., Godinho, A., & Kushnir, V. (2017b). Using Mechanical Turk to recruit participants for internet intervention research: Experience from recruitment for four trials targeting hazardous alcohol consumption. *BMC Medical Research Methodology*, 17(1), 156. <https://doi.org/10.1186/s12874-017-0440-3>.
- Cunningham, J. A., Hodgins, D. C., Bennett, K., Bennett, A., Talevski, M., Mackenzie, C. S., & Hendershot, C. S. (2016). Online interventions for problem gamblers with and without co-occurring mental health symptoms: Protocol for a randomized controlled trial. *BMC Public Health*, 16, 624.
- Cunningham, J. A., Hodgins, D. C., & Toneatto, T. (2008). Problem gamblers' interest in self-help services. *Psychiatric Services*, 59(6), 695–696.
- Cunningham, J. A., Hodgins, D. C., & Toneatto, T. (2011). Pilot study of an internet-based personalized feedback intervention for problem gamblers. *Journal of Gambling Issues*, 26, 3–10.
- Cunningham, J. A., Hodgins, D. C., Toneatto, T., & Murphy, M. (2012). A randomized controlled trial of a personalized feedback intervention for problem gamblers. *PLoS One*, 7(2), e31586. <https://doi.org/10.1371/journal.pone.0031586>.
- Cunningham, J. A., Hodgins, D. C., Toneatto, T., Rai, A., & Cordingley, J. (2009). Pilot study of a personalized feedback intervention for problem gamblers. *Behavior Therapy*, 40(3), 219–224. <https://doi.org/10.1016/j.beth.2008.06.005>.
- Cunningham, J. A., Kypri, K., & McCambridge, J. (2013). Exploratory randomized controlled trial evaluating the impact of a waiting list control design. *BMC Medical Research Methodology*, 13(1), 150. <https://doi.org/10.1186/1471-1471-13-150>.
- Currie, S. R., Hodgins, D. C., & Casey, D. M. (2013). Validity of the Problem Gambling Severity Index interpretive categories. *Journal of Gambling Studies*, 29(2), 311–327. <https://doi.org/10.1007/s10899-012-9300-6>.
- Diskin, K. M., & Hodgins, D. C. (2009). A randomized controlled trial of a single session motivational intervention for concerned gamblers. *Behaviour Research and Therapy*, 47(5), 382–388. <https://doi.org/10.1016/j.brat.2009.01.018>.
- Ferris, J., & Wynne, H. (2001). *The Canadian problem gambling index: Final report*. Retrieved from: <http://www.ccgr.ca/en/projects/resources/CPGI-Final-Report-English.pdf>.
- Hodgins, D. C., Cunningham, J. A., Murray, R., & Hagopian, S. (2019). Online self-directed interventions for gambling disorder: Randomized controlled trial. *Journal of Gambling Studies*. <https://doi.org/10.1007/s10899-019-09830-7> (in press).
- Hodgins, D. C., Currie, S. R., Currie, G., & Fick, G. H. (2009). Randomized trial of brief motivational treatments for pathological gamblers: More is not necessarily better. *Journal of Consulting and Clinical Psychology*, 77(5), 950–960.
- Hodgins, D. C., Currie, S. R., & el-Guebaly, N. (2001). Motivational enhancement and self-help treatments for problem gambling. *Journal of Consulting and Clinical Psychology*, 69(1), 50–57.
- Hodgins, D. C., Fick, G. H., Murray, R., & Cunningham, J. A. (2013). Internet-based interventions for disordered gamblers: Study protocol for a randomized controlled trial of online self-directed cognitive-behavioural motivational therapy. *BMC Public Health*, 13, 10. <https://doi.org/10.1186/1471-2458-13-10>.
- 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 Research*, 166(1), 76–84. <https://doi.org/10.1016/j.psychres.2007.11.008>.
- Luquiens, A., Tanguy, M. L., Lagadee, M., Benyamina, A., Aubin, H. J., & Reynaud, M. (2016). The efficacy of three modalities of internet-based psychotherapy for non-treatment-seeking online problem gamblers: A randomized controlled trial. *Journal of Medical Internet Research*, 18(2), e36. <https://doi.org/10.2196/jmir.4752>.
- Merkouris, S. S., Rodda, S. N., Austin, D., Lubman, D. L., Harvey, P., Battersby, M., ... Dowling, N. A. (2017). GAMBLINGLESS: FOR LIFE study protocol: A pragmatic randomised trial of an online cognitive-behavioural programme for disordered gambling. *BMJ Open*, 7(2), e014226. <https://doi.org/10.1136/bmjopen-2016-014226>.
- Peer, E., Vosgerau, J., & Acquisti, A. (2014). Reputation as a sufficient condition for data quality on Amazon Mechanical Turk. *Behavioral Research Methods*, 46(4), 1023–1031. <https://doi.org/10.3758/s13428-013-0434-y>.
- Riper, H., Blankers, M., Hadiwijaya, H., Cunningham, J., Clarke, S., Wiers, R., ... Cuijpers, P. (2014). Effectiveness of guided and unguided low-intensity internet interventions for adult alcohol misuse: A meta-analysis. *PLoS One*, 9(6), e99912. <https://doi.org/10.1371/journal.pone.0099912>.
- Slutske, W. S. (2006). Natural recovery and treatment-seeking in pathological gambling: Results of two U.S. national surveys. *American Journal of Psychiatry*, 163(2), 297–302.
- Suurvali, H., Hodgins, D. C., Toneatto, T., & Cunningham, J. A. (2008). Treatment-seeking among Ontario problem gamblers: Results of a population survey. *Psychiatric Services*, 59, 1343–1346.
- Suurvali, H., Hodgins, D. C., Toneatto, T., & Cunningham, J. A. (2012). Hesitation to seek gambling-related treatment among Ontario problem gamblers. *Journal of Addiction Medicine*, 6(1), 39–49. <https://doi.org/10.1097/ADM.0b013e3182307dbb>.
- Toce-Gerstein, M., & Volberg, R. A. (2004). *The NODS-CLiP: A new brief screen for pathological gambling*. Paper presented at the international symposium on problem gambling and co-occurring disorders, Mystic, CT. [http://www.gamblingproblem.org/presentations/Volberg.mht/Volberg\\_files/frame.htm](http://www.gamblingproblem.org/presentations/Volberg.mht/Volberg_files/frame.htm)
- Wulfert, E., Hartley, J., Lee, M., Wang, N., Franco, C., & Sodano, R. (2005). Gambling screens: Does shortening the time frame affect their psychometric properties? *Journal of Gambling Studies*, 21(4), 521–536. <https://doi.org/10.1007/S10899-005-5561-7>.