



# The efficacy of motivational interviewing for disordered gambling: Systematic review and meta-analysis



Igor Yakovenko<sup>\*</sup>, Leanne Quigley, Brenda R. Hemmelgarn, David C. Hodgins, Paul Ronksley

University of Calgary, Canada

## HIGHLIGHTS

- Efficacy of motivational interviewing for gambling was assessed via meta-analysis.
- Primary outcomes were days gambled and dollars lost per month.
- The treatment was efficacious according to both outcomes at treatment's end.
- Efficacy declined over time with weak support for longer term results.
- Overall, motivational interviewing for gambling may be efficacious in the short term.

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## ABSTRACT

Motivational interviewing is a client-centered therapeutic intervention that aims to resolve ambivalence toward change. We conducted a systematic review and meta-analysis on the efficacy of motivational interviewing, compared to non-motivational interviewing controls, in the treatment of disordered gambling. Electronic databases were searched for randomized controlled trials that evaluated change in gambling behavior using motivational interviewing in adult disordered gamblers. The primary outcomes were the weighted mean difference (WMD) for change in average days gambled per month and average dollars lost per month. The search strategy yielded 447 articles, of which 20 met criteria for full text review. Overall, 8 studies ( $N = 730$ ) fulfilled the inclusion criteria for systematic review and 5 ( $N = 477$ ) were included in the meta-analysis. Motivational interviewing was associated with significant reduction in gambling frequency up to a year after treatment delivery. For gambling expenditure, motivational interviewing yielded significant reductions in dollars spent gambling compared to non-motivational controls at post-treatment only (1–3 months). Overall, the results of this review suggest that motivational interviewing is an efficacious style of therapy for disordered gambling in the short term. Whether treatment effects are maintained over time remains unclear.

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## 1. Introduction

Approximately 2–3% of the general population suffers from gambling problems (Kessler et al., 2008; Williams, Belanger, & Arthur, 2011), with a further three- to four-fold impacted by disordered gambling including friends and families of gamblers. There are significant personal costs of gambling including loss of employment, jeopardized relationships, and comorbid mental health problems. *Disordered gambling* is defined as “persistent and recurrent problematic gambling behavior” characterized by an inability to control gambling, leading to significant psychosocial consequences for the individual, and is diagnosed on the basis of specific criteria outlined by the Diagnostic and Statistical Manual of Mental Disorders-5 (DSM-5; American Psychiatric Association, 2013). *Problem*

*gambling* has been proposed as a term to describe gambling behavior that gives rise to negative consequences for the individual, others in his/her social network, or for the community, but does not necessarily meet DSM-5 diagnostic criteria for disordered gambling (Ferris, Wynne, & Single, 1998; VCGA, 1997). For the purpose of the present study, the term *disordered gambling* will be used as an inclusive term to refer to all terms used to describe gambling disorders in the literature, including problem/pathological gambling and gambling that is self-identified as problematic by individuals (termed *concerned gambling*).

An emerging area of treatment research in gambling is a style of therapy called motivational interviewing (MI). Motivational interviewing, or motivational enhancement therapy (MET) is a client-centered counseling approach that addresses the question of why certain individuals avoid change and persist in maladaptive behaviors (Miller & Rollnick, 2002). The goal of the therapist is to assess the client's readiness for change and to facilitate the transition toward behavior modification

<sup>\*</sup> Corresponding author at: Department of Psychology, University of Calgary, 2500 University Drive NW, Calgary, Alberta, T2N 1N4, Canada.  
E-mail address: iyakoven@ucalgary.ca (I. Yakovenko).

by resolving any ambivalence about change. Motivational interviewing has its roots in the treatment of alcohol disorders. A number of systematic reviews and meta-analyses have provided evidence for the efficacy of motivational interviewing in the treatment of various substance use disorders (e.g., Miller & Wilbourne, 2002). In a large meta-analysis spanning 25 years across multiple domains of outcome behaviors, Lundahl, Kunz, Brownell, Tollefson, and Burke (2010) compared motivational interviewing with other non-motivational interventions. A total of 119 studies were included with outcomes ranging from substance use and health-related behaviors to gambling and treatment engagement. The results of the study showed that motivational interviewing produced robust, significant results across most outcomes and moderators in the small effect range, but only when compared to weak control groups such as nonspecific treatment as usual, waitlist control, and written materials. When judged against specific treatments, MI was not significantly more effective. The effect size for gambling problem severity was medium ( $g = .39$ ), although only three studies included gambling outcomes, making the results less reliable. Overall, the largest meta-analysis of motivational interviewing to date showed that it may be an effective treatment style depending on participant, outcome, and delivery factors.

In the area of disordered gambling, motivational interviewing was first adopted in 2001 and has since produced positive results in a number of randomized controlled trials (RCTs). Hodgins, Currie, and el-Guebaly (2001) compared a brief motivational phone intervention plus a cognitive-behavioral therapy (CBT)-based workbook to workbook only and waiting-list control groups. Participants who received the motivational interview showed greater reductions in days gambled and dollars lost than both the workbook only and the waiting list controls at 3 and 6 months follow-ups. However, at 12 months, the motivational interviewing group only showed an advantage for those with less severe gambling problems.

Similarly, Hodgins, Currie, Currie, and Fick (2009) assessed the efficacy of two self-directed motivational interventions compared with a waiting list control and a workbook only control in a sample of disordered gamblers. Both motivational treatments resulted in significantly less frequent gambling than controls. However, the workbook only participants were just as likely to reduce their losses and to not meet criteria for a gambling disorder over 12-months follow-up. Additionally, booster motivational interviewing treatments in the form of follow-up phone calls over 12 months did not result in greater improvements than a single session treatment. The study provided evidence for the utility and efficacy of motivational interviewing in a single session dose.

In contrast to the above studies, Petry, Weinstock, Ledgerwood, and Morasco (2008) found few benefits of a single session of MET. In a sample of 180 problem gamblers, their results showed no significant reduction in any of the outcomes for the MET group compared to 10 minute brief advice or assessment only control. Rather, brief advice was the only active condition to produce greater reductions in gambling relative to the assessment only control. Adding three sessions of CBT to the single session of MET produced improvements in scores on the Addiction Severity Index – Gambling (Lesieur & Blume, 1991) compared to controls, but overall the effects were still less pronounced than those obtained with brief advice.

The same study design was replicated by Petry, Weinstock, Morasco, and Ledgerwood (2009) on a sample of 117 college students. Compared to assessment only, MET produced significant decreases in gambling severity scores, as well as days spent gambling and dollars wagered over time. However, motivational enhancement was not significantly different in its benefits compared to other active interventions (brief advice and MET + CBT).

Thus, individual trial evidence suggests that motivational interviewing may be an efficacious treatment for disordered gambling, although robustness of the effects is unclear. Efficacy appears to vary based on target population and follow-up period. Despite the existence of some positive evidence for the use of MI with disordered gamblers,

no systematic reviews or meta-analyses have been conducted on the efficacy of motivational interviewing with disordered gambling. Given the small number of studies and the inconsistency in their findings, it is difficult to determine the efficacy of MI for gambling via review of individual studies. Meta-analysis and pooling of these prior studies provides the totality of the evidence in the literature and aims to advance the field by providing stronger evidence for or against motivational interviewing as a treatment for disordered gambling. In addition, the only meta-analysis of MI to date to include gambling trials did not include the most recent studies and did not select outcome variables and comparison groups specific to the field of gambling. Thus, it is problematic to discern the efficacy of MI for gambling from studies that were designed with a view toward other research areas. The objective of the current study was to carry out a systematic review and meta-analysis of randomized controlled trials (RCTs) that examined the effects of motivational interviewing interventions compared to no treatment or interventions without motivational interviewing on gambling frequency and gambling expenditure in adult disordered gamblers. A secondary objective was to assess the stability of the effects of motivational interviewing over time.

## 2. Method

### 2.1. Data sources and searches

The following databases were searched for eligible studies from 1966 to November, 2013: PsycINFO, Medline, EMBASE (Excerpta Medica Database), CINAHL (Cumulative Index to Nursing and Allied Health), CENTRAL (Cochrane Central Registry of Controlled Trials), Current Controlled Trials, and the Campbell Collaboration. In addition, two individuals (I. Y. and L. Q.) independently searched the reference lists of the identified relevant publications, as well as all conference abstracts between 2010 and 2012 from the International Conference on Motivational Interviewing and the Alberta Gambling Research Institute Conference. Experts in the field were contacted for information about ongoing or unpublished studies.

The systematic search included studies in all languages. The first search was done using the Boolean term “or” to explode (search by subject heading) and map (search by keyword) the following MeSH headings: “gambling”, and “pathological gambling”. The second search was done using the Boolean term “or” to explode and map “motivational interviewing”, “readiness to change”, “stages of change”, “feedback”, and “motivation training”. The two Boolean searches were combined using the Boolean term “and”. An RCT filter validated by the McMaster University Health Information Research Unit for PsycINFO was applied to identify the desired study design (Health Information Research Unit – HIRU, 2011). The RCT filter described by the Cochrane collaboration was used for MEDLINE and EMBASE (Higgins & Green, 2011).

### 2.2. Study selection

Inclusion criteria were study population (adult disordered gamblers, including pathological, problem, or concerned gamblers), intervention (motivational interviewing), comparison (no treatment or non-motivational treatments if they differed only in the use of motivational interviewing compared to the intervention), outcome (gambling frequency and gambling expenditure, as operationalized by the study), and study design (RCT). The decision to exclude RCTs with active comparison groups that differed in more than just the use of MI was made to be able to attribute significant results specific to the effects of MI. By including comparison groups that differ in more than the use of motivational interviewing, it would be difficult to determine if positive effects of the MI group compared to the control were due to the MI methods.

Gambling frequency and gambling expenditure were chosen as the primary outcomes because they were the most consistently reported outcomes in the surveyed trials. All other outcomes including gambling severity and consequences were either not reported by the majority of

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