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MOTIVATIONAL INTERVIEWING (MI) AND COGNITIVE BEHAVIORAL GROUP THERAPY IN THE TREATMENT OF GAMBLING DISORDER: EFFICACY, SENSITIVITY TO CONTEMPORARY ALCOHOL PROBLEMS, AND PROCESSES IN MI

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THESIS FOR DOCTORAL DEGREE (Ph.D.)

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ABSTRACT

The overall objective of the present thesis was to evaluate the efficacy of motivational interviewing (MI) and cognitive behavioral group therapy (CBGT) in the treatment of gambling disorder including comparisons with a no treatment control group. Secondary analyses aimed at investigating the treatments relative sensitivity to contemporary alcohol problems, as well as investigating processes in MI.

A total of 150 problem gamblers according to NORC DSM-IV screen for gambling problems were randomized to MI, CBGT, or a no-treatment control. MI and CBGT combined in one single treatment arm (participants receiving either MI or CBGT) showed better treatment outcomes than the no-treatment control at post treatment. However, supplementary analyses that only included participants with severe gambling problems (gambling disorder) reviled that the no treatment control showed marginally better outcomes than CBGT and significantly better outcomes than MI.

A secondary analysis was conducted aiming to investigate whether screening for risky alcohol habits can provide guidance on whether people with gambling disorder should be recommended MI or CBGT. The interaction between treatment and alcohol habits was significant and suggests that patients with gambling disorder and risky alcohol habits were better helped by MI, while those without risky alcohol habits were better helped by CBGT.

An additional secondary analysis was conducted with the purpose to test hypothesized relationships among process and outcome variables in the MI theory, in a context of gambling disorder treatment. The Motivational Interviewing Treatment Integrity Code was used to assess therapists' verbal behaviors during MI sessions and the Client Language Assessment in Motivational Interviewing was used to assess clients' verbal behaviors. As hypothesized, high scores on empathy reduced symptoms of gambling disorder at six-month follow-up. High scores on MI spirit increased the frequency of preparatory change talk, which in turn increased the probability of commitments occurring. Unexpectedly, MI adherent utterances decreased the frequency of preparatory change talk. No indirect effects were found to confirm that client language mediated the relation between therapist skills in MI and treatment outcome.

Main conclusions
MI treatment including a significant proportion of sessions lacking competent use of MI adherent methods, evoking skills and autonomy support might be harmful for people with gambling disorder who voluntarily sign up to treatment after an assessment interview.

Patients with gambling disorder and risky alcohol habits are more likely to be helped if they are referred to MI treatment compared to CBGT, while those without risky alcohol habits are likely to be best helped if they are referred to CBGT.

Therapists' skills in demonstrating empathy seems to be a promising therapeutic component linked to successful treatment outcomes when treating gambling disorder.

LIST OF SCIENTIFIC PAPERS

I. Carlbring, P., Jonsson, J., Josephson, H., & Forsberg, L. (2010). Motivational interviewing versus cognitive behavioral group therapy in the treatment of problem and pathological gambling: a randomized controlled trial. *Cogn Behav Ther*, 39(2), 92-103. doi:10.1080/16506070903190245

II. Josephson, H., Carlbring, P., Forsberg, L., & Rosendahl, I. (2016). People with gambling disorder and risky alcohol habits benefit more from motivational interviewing than from cognitive behavioral group therapy. *PeerJ*, 4, e1899. doi:10.7717/peerj.1899

III. Josephson, H., Forsberg, L., Carlbring, P., & Rosendahl, I. (2016). Evaluation of processes in motivational interviewing in a setting of gambling disorder treatment. Manuscript.

CONTENTS

LIST OF ABBREVIATIONS

ANCOVA	Analysis of Covariance
AUDIT	Alcohol Use Disorders Identification Test
BDI-2	Beck's Depression Inventory
CBT	Cognitive Behavioral Therapy
CBGT	Cognitive Behavioral Group Therapy
CLAMI	Client Language Assessment in Motivational Interviewing
DSM-5	Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition
IQR	Interquartile range
MI	Motivational Interviewing
MIA	Motivational Interviewing Adherent utterances
MICO	Motivational Interviewing Consistent behaviors
MIIN	Motivational Interviewing Inconsistent behaviors
MINA	Motivational Interviewing Non Adherent utterances
MITI	Motivational Interviewing Treatment Integrity
NODS	NORC DSM-IV screen for gambling problems
SCOPE	Sequential Code for Observing Process Exchanges
SEM	Structural Equation Model
SD	Standard Deviation

1 INTRODUCTION

1.1 Gambling disorder

When I started to work on the present thesis in spring 2010, the term problem gambling was employed to describe all forms of gambling that led to negative consequences for the gambler, others, or the community. The term often also includes the more severe classification pathological gambling, which leads to more severe consequences. It has been estimated that problem gambling affects 0.3%–5.3% of the adult population around the world (Wardle et al., 2011), causing, or worsening, negative consequences such as poor finances and relationship problems as well as mental and physical health issues (Abbot et al., 2013). As the work on this thesis is about to end in fall 2016, the term problem gambling is still used in the same way. However, the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) (American Psychiatric Association, 2013) has renamed pathological gambling as gambling disorder, and what is more important, the illegal acts criterion has been eliminated, and the threshold for diagnosis lowered to four criteria of a possible nine. Recent research indicates that the increased sensitivity of the DSM-5 gambling disorder diagnosis successfully identifies a broader group of gamblers with clinically significant gambling-related problems (Rennert et al., 2014). Moreover, in DSM-5, gambling was reclassified as an addiction and related disorder along with alcohol and substance use disorders. The diagnosis may have found its proper place, considering that it shares several characteristics with substance-related disorders (American Psychiatric Association, 2013). Common features include preoccupation, increased tolerance, loss of control, withdrawal symptoms, and family and job disruption.

1.2 Treatments

The revision in DSM-5 is also in line with the way treatment is designed for gambling disorder. Cognitive behavioral therapy has the strongest support in the treatment of gambling disorder, followed by MI (Cowlishaw et al., 2012). Looking at the components used in CBT programs for gambling disorder, one can see that they largely overlap those used in alcohol and drug treatment, for example: analysis of triggers and risk situations, acquisition of coping skills, assertiveness training, problem solving training, social skills training, communication training, in vivo exposure and response prevention, stimulus control, relaxation, alternative or pleasurable activity planning (Gooding & Tarrier, 2009). However, some components were specifically designed for treating gambling problems, such as modification of gambling cognitive errors (e.g., erroneous beliefs and misunderstanding of randomness) and financial management (Gooding & Tarrier, 2009). The same overlap applies to MI, which is a treatment originally tailored to treating alcohol abuse (Miller & Rose, 2009). The method aims at evoking the healthy part of the client by use of interpersonal skills like empathy and collaboration; it allows the clients' perspective and ideas to influence the session, as well as

supporting the client's perception of choice and experience of personal control. The therapist shall also demonstrate skills such as asking permission before giving advice or information, affirming the client by saying something positive or commenting on the client's strengths, and emphasizing the client's control or ability to decide as well as reflective listening.

Web-based treatment is an emerging field of treatment for gambling disorder. This new way of providing treatment may be an easier way to access evidence-based treatment than traditional types of treatments (Yakovenko & Hodgins, 2016), making this option very interesting, considering that 82% of people with a gambling problem never seek treatment provided by health care bodies (Slutske, Blaszczynski, & Martin, 2009). Another interesting approach is the integration of other methods, like mindfulness, in gambling treatment together with CBT, with promising results (Toneatto, Pillai & Courtice, 2014). Pharmacological treatment alone has shown limited support for treating gambling disorder; the most promising pharmacological treatments are opioid antagonists, that is, naltrexone and nalmefene (Bartley & Bloch, 2013; Grant, Kim, Hollander, & Potenza, 2008; Kovanen et al., 2016).

CBT has been evaluated in a large number of clinical trials by independent research teams, including a number of randomized controlled trials (Cowlishaw et al., 2012; Gooding & Tarrier, 2009). Today the method is an independent evidence-based treatment for gambling disorder, with persistent effect sizes up to 12 months, in some studies even 24 months (Cowlishaw et al., 2012; Gooding & Tarrier, 2009). CBT has been found to be particularly effective in reducing symptoms of gambling disorder, but has also shown large effect when the outcome is measured in terms of gambling behavior, such as frequency of gambling and money lost (Cowlishaw et al., 2012; Gooding & Tarrier, 2009).

MI has less research support than CBT, but may still be said to be an evidence-based intervention for gambling disorder (Yakovenko & Hodgins, 2016). However, unlike CBT, MI does not seem to be effective in reducing symptoms of gambling disorder (Cowlishaw et al., 2012), but rather is an efficacious treatment for reducing frequency of gambling and money lost, at least in the short term (one to three months); the long term efficacy is unclear (Cowlishaw et al., 2012; Yakovenko, Quigley, Hemmelgarn, Hodgins, & Ronksley, 2015).

1.3 Comorbidity

It is well known that gambling disorder is highly comorbid with other psychiatric disorders (Bischof et al., 2013; Lorains, Cowlishaw, & Thomas, 2011; Petry, Stinson, & Grant, 2005). Data derived from a large national sample in the United States indicate that the most frequently reported lifetime comorbid condition among people with gambling disorder was alcohol use disorder (73%), followed by personality disorders (61%), mood disorders (50%) anxiety disorders (41%), and drug related disorders (38%) (Petry et al., 2005).

1.4 Predictors of successful treatment outcomes

A recent systematic review of client characteristics predicting outcome in psychological treatment for gambling disorder examined 50 studies from 1990 to 2016 (Merkouris, Thomas, Browning, & Dowling, 2016). The team found that prognostic sociodemographic factors for successful treatment outcome are male gender, older age, and being employed. Gambling-related prognostic factors for successful treatment outcome are lower severity of gambling symptoms, lower levels of gambling behaviors, and no gambling debts. Lower levels of alcohol use, depression, higher attendance in treatment, as well as being in the action stage of change, have also been found to be predictive for successful treatment outcomes. Of these factors, lower levels of depression and being male was the most consistent predictors of successful outcomes (Merkouris et al., 2016).

1.5 Treating gamblers with contemporary alcohol problems

In one study, it was found that among gamblers seeking treatment for their gambling problems the rate of current alcohol use disorders was 21% (Dowling et al., 2015). Higher levels of alcohol use has been associated with poor treatment outcome at post treatment and medium-term follow-ups in a review article (Merkouris et al., 2016). Alcohol use disorder seem to be an aggravating factor in treatment that correlates with impaired adherence to treatment (Milton, Crino, Hunt, & Prosser, 2002; Rash, Weinstock, & Petry, 2011) and increased risk of gambling relapse (Hodgins & el-Guebaly, 2010). However, these results are derived primarily from studies examining CBT interventions, and we do not know much about whether the sensitivity to contemporary alcohol use differ between various treatment methods.

1.6 Processes in motivational interviewing (MI)

Motivational interviewing (MI) has shown a small but significant positive effect in reducing gambling behavior (Yakovenko et al., 2015). To develop the method further and make it more effective, it is vital to better specify particular components that predict outcomes and how these components are related to each other. The strength of clients' commitments has been shown to be related to successful outcomes when using MI in the treatment of gambling disorder (Hodgins, Ching, & McEwen, 2009). Apart from this finding, we know very little about how various therapist and client behaviors during MI sessions affect outcome in the treatment of gambling disorder. However, there has been more research on processes in MI in the field of substance abuse and particularly alcohol abuse.

Figure 1 describes hypothesized relationships among process and outcome variables suggested by (Miller & Rose, 2009), with the addition of a hypothesized pathway from MI-

inconsistent behaviors (MIIN) to client sustain talk and from sustain talk to worse treatment outcome (Apodaca & Longabaugh, 2009; Magill et al., 2014).

The technical hypothesis in the MI model (see Figure 1) has been evaluated in a meta-analysis (Magill et al., 2014). The research team examined a total of 16 reports based on 12 primary studies, which together included 1004 individuals. The study participants were primarily adults with alcohol problems. However, drug use, smoking, and gambling were also represented as target behaviors. The meta-analysis revealed that therapist MI-consistent (MICO) skills were related to higher rates of client change talk, illustrated by path 1 in Figure 1. Therapist MI-inconsistent (MIIN) behaviors were related to lower rates of change talk (path 2) and higher rates of sustain talk (path 3). In the next step (path 4) higher rates of sustain talk were associated with worse treatment outcome. These statistically significant correlations are consistent with what was expected. Contrary to what was hypothesized, the effect for change talk on treatment outcome (path 5) was not significant, and higher rates of therapists' MICO skills did not reduce clients' rates of sustain talk (path 6).

The authors of the meta-analysis argued that the failure of therapists' MICO skills to reduce clients' sustain talk could be attributed to limitations of the meta-analytic method in analyzing dynamic processes in therapy sessions. The clinical process of MI partly focuses on exploring and resolving client ambivalence regarding change of a target behavior; therefore, it might be natural that therapists' MICO skills in some phases of the session should also increase client sustain talk (Magill et al., 2014).

The most unexpected finding, that frequency of change talk did not predict client behavior change, is more difficult to explain. However, a combined measure of change talk and sustain talk used in some of the studies included in the meta-analysis was able to predict treatment outcome (Magill et al., 2014).

The meta analysis did not examine the associations between preparatory change talk (client utterances of desire, ability, reason and need, to change a behavior) and commitment to behavior change (path 7) and between commitment and outcome (path 8). The relation between preparatory change talk and strength of commitment was first established by a research team in 2003 (Amrhein, Miller, Yahne, Palmer, & Fulcher, 2003). The relation between commitment and outcome has been examined in the field of gambling disorder (Hodgins et al., 2009). The research group found that strength of clients' commitments was related to better gambling outcome at 12-month follow-up. The link between commitment and treatment outcome is also supported from studies from the field of alcohol and substance use treatment (Amrhein et al., 2003; Campbell, Adamson, & Carter, 2010; Daeppen, Bertholet, Gmel, & Gaume, 2007).   On the other hand, there are other studies that found no association between client commitment language and subsequent behavior change (Gaume, Bertholet, Faouzi, Gmel, & Daeppen, 2013; Gaume, Gmel, & Daeppen, 2008; Martin, Christopher, Houck, & Moyers, 2011; Walker, Stephens, Rowland, & Roffman, 2011). A more general category of change talk including frequency of both preparatory change talk and commitment language might be a better predictor of treatment outcome in MI, rather than

only commitment language (Martin et al., 2011; Moyers, Martin, Houck, Christopher, & Tonigan, 2009).

Magill and colleagues (2014) did not analyze whether MICO had a direct effect on treatment outcomes (path 9). There are only a few studies indicating that therapist MICO skills have a direct effect on treatment outcome (Moyers et al., 2009). In a study investigating a single session MI for reducing drug consumption, it was found that the MICO component percentage of complex reflections out of all reflections predicted decrease of cannabis use at three-month follow-up (McCambridge & Strang, 2004). Even more specifically, Barnett et al. found that percentage of reflections on change talk was associated with outcome in alcohol treatment (Barnett et al., 2014).

As for the MICO, the meta-analysis did not analyze whether MIIN had a direct effect on treatment outcomes (path 10). MIIN is associated with worse outcome in a number of studies (Apodaca & Longabaugh, 2009; Gaume, Bertholet, Faouzi, Gmel, & Daeppen, 2010; Moyers & Martin, 2006; Moyers et al., 2007).

One possible drawback of MICO is that it is a broad concept that includes a variety of techniques used by MI practitioners. It is possible that some of these techniques are significantly more effective than others, but such information is lost when all techniques are merged into a single category. In a later study that was not included in the meta-analysis, Barnett et al. (2014) presented results on separate techniques, so called micro skills. The research team found significant indirect effects of percentage of complex reflections and percentage of open questions on behavior change (marijuana use at one-year follow-up), indicating that percentage of client change talk mediated the effects. Such information on the relation of micro skills to client language and treatment outcome has a greater value for the development of methods than information about the umbrella concept of MICO, which is likely to contain both effective and ineffective techniques.

One recent study investigated MI conversations on alcohol consumption with young men who had not sought treatment for alcohol problems. The frequency of MICO turned out to be associated with successful drinking outcomes only when it was experienced MI therapists who used MICO techniques and only when the clients had more severe problems. (Gaume et al., 2016)

The link between the relational component (empathy and MI-spirit) and treatment outcomes (path 11) is supported by few studies (Baird et al., 2007; Morgenstern et al., 2012; Thyrian et al., 2007) Miller, 1993). When analyzing the relational components individually, higher estimates of empathy was found to be linked to successful outcomes (Gaume et al., 2008), as well as higher estimates of MI-spirit (McCambridge, Day, Thomas, & Strang, 2011). On the other hand, other studies did not find any association between empathy and outcome (Feldstein & Forcehimes, 2007; Pirlott, Kisbu-Sakarya, Defrancesco, Elliot, & Mackinnon, 2012), or between MI-spirit and outcome (Gaume et al., 2008; Pirlott et al., 2012).

The relationship between the relational component and change talk (path 12) is supported by studies that found that an overall empathic style together with high MI spirit was associated with more change talk (Miller et al., 1993; Morgenstern et al., 2012). When analyzing the relational components individually, higher estimates of both empathy and MI-spirit was found to elicit more change talk (Pirlott et al., 2012). On the other hand, Daeppen and colleagues (2008), did not find any association between the relational components and reduced drinking outcomes.
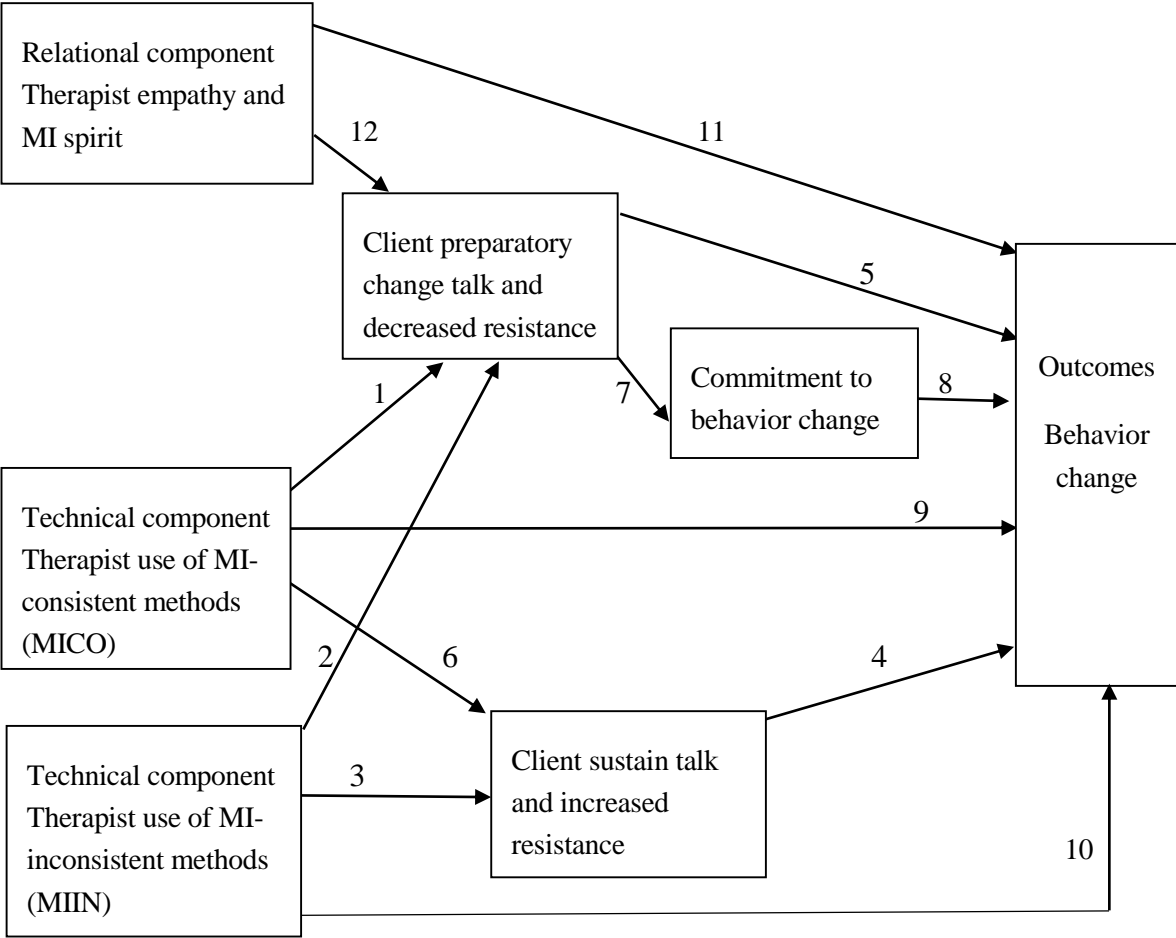

Figure 1. Hypothesized relationships among process and outcome variables in MI theory, suggested by Miller and Rose, (2009), with the addition of a hypothesized pathway from MI-inconsistent behaviors to client sustain talk and from sustain talk to worse treatment outcome (Magill et al., 2014).

2 AIM

The overall objective of the present thesis was to evaluate the efficacy of MI and CBGT in the treatment of gambling disorder including comparisons with a no treatment control group. Secondary analysis aimed at investigating the treatments relative sensitivity to contemporary alcohol problems, as well as investigating processes in MI.

2.1 Study I

The aim of study I was to test the efficacy of four individual MI sessions, eight CBGT sessions, and a no-treatment control (wait-list) in the treatment of problem and pathological gambling.

2.2 Study II

The aim of study II was to investigate whether screening for risky alcohol habits can provide guidance on whether people with gambling disorder should be recommended CBGT or MI.

2.3 Study III

The aim of study III was to test the following hypothesized relationships among process and outcome variables stated by Miller and Rose (2009), with the addition of a hypothesized pathway from MI-inconsistent behaviors to client sustain talk and from sustain talk to worse treatment outcome (Magill et al., 2014)

1) Higher ratings of therapists' skills in empathy and MI spirit, and higher frequencies of MI adherent utterances (MIA) predicts, a) less symptoms of gambling disorder at six-month follow-up, b) higher frequency of preparatory change talk among clients, and c) lower frequency of sustain talk among clients.

2) Higher frequency of MI non adherent utterances (MINA) predicts, a) more symptoms of gambling disorder at six-month follow-up, b) lower frequency of preparatory change talk among clients, and c) higher frequency of sustain talk among clients.

3) Higher frequency of preparatory change talk predicts; a) less symptoms of gambling disorder at six-months follow-up, and b) occurrence of clients' commitment language.

4) Higher frequency of sustain talk predicts; a) more symptoms of gambling disorder at six-months follow-up, and b) absence of clients' commitment language.

5) Occurrence of clients' commitment language predicts less symptoms of gambling disorder at six-months follow-up.

6) The relationship between therapists' skills in MI and treatment outcome is mediated by clients' preparatory change talk and commitment language, shown as indirect effects in the SEM model.

3 METHODOLOGICAL CONSIDERATIONS

3.1 Design

The main study, study I, was designed as a randomized controlled trial consisting of three parallel groups, with measurements at baseline and nine weeks (one week after the end of treatment). After nine weeks, the no-treatment control group received the allotted treatment, and participants were included in the two active treatment arms. Data were also collected at two prolonged follow-ups at 6 and 12 months. Methodological considerations concerning study I are largely applicable to the two secondary analyses presented in study II and study III.

It has been estimated that about one third of individuals with gambling problems recover without formal treatment (Slutske et al., 2009), which is probably also valid for the present data. However, it is most likely that the two active treatment arms and the control group share the effect of natural recovery, suggesting that the treatments actually account for between-group differences in gambling outcomes in studies I, II, and III.

For ethical reasons, participants in the control group received treatment before the follow-up data were collected. In other words, there is no between-group comparison of the two active treatment groups and the control group at 6- and 12-month follow-ups. Therefore, we do not know whether the difference found between the two active treatment groups and the control group would have remained during the follow-up. It is therefore also unknown to what extent natural recovery accounts for the within-group decreases in gambling outcomes at the 6- and 12-month follow-ups.

Selection bias might be the most serious threat to internal validity, because if participants in one group differ from participants in another group regarding prognostic factors before the onset of treatment, analyses cannot provide support for a finding that treatment accounts for differences in outcomes between the groups. In the present study participants were randomized to one of the conditions', MI, CBGT or no-treatment control, which is the gold-standard procedure that hopefully results in an even distribution between treatment groups of both known and unknown prognostic factors of treatment outcome.

Even though participants were randomized to the conditions, attrition bias might have introduced selection biases into the study. Fifteen of the 50 participants randomized to CBGT condition never started their treatment, and the corresponding figures for the MI condition were 8 of 54 participants. The remaining 46 participants were randomized to the waitlist control group. In other words, we cannot claim that the participants were entirely randomized

to the conditions, and the internal validity might be threatened by selection biases. We do not know who dropped out: Was it those who felt that they could quit on their own and in many cases managed to do so (Slutske et al., 2009). Was it those who knew that they would not stop? Did they drop out because of circumstances not related to gambling, such as illness or work schedules? The truth is probably a mix of those explanations.

The problem with missing data, both dropout and intermittent, should be appropriately handled by including all randomized clients in the analysis of the study. There is more than one way to handle the case of missing values, such as by using modern methods for longitudinal data analysis, that is, generalized estimating equations and mixed model analysis, or different imputation methods where multiple imputation is preferred to single imputation among longitudinal methods (Twisk, 2013). However, all these methods assume that missing data are missing at random. It can certainly be argued that the missing data in both studies I and II should have been handled in this way, which unfortunately was not the case. However, in study III, missing data were handled by a structural equation model with maximum likelihood estimation and no list wise deletion (Acock, 2013).

3.2 Was study I sufficiently powered?

Studies comparing two or more active treatments often have far too little power to detect clinically significant differences (Kazanzis, 2000). The comparison between MI and CBGT in study I was powered as a non-inferiority trial, intended to show that the effect of MI and CBGT differed only marginally. Thereafter, MI and CBGT were merged into one single active treatment arm compared against the control group. Using the merged variable of MI and CBGT, the latter analysis was sufficiently powered as a superiority trial. The main reason for designing the comparison between MI and CBGT as a non-inferiority trial and then merging them into one group was to gain more power for the superiority study, active treatment with MI or CBGT versus no treatment. Project funding and the time frame made it impossible to recruit enough participants to power comparisons between the three conditions as a superiority trial. However, this means that study I was not sufficiently powered to detect real differences between MI and CBGT. Moreover, we cannot conclude that MI is more effective than a no-treatment control; neither can we conclude that CBGT is more effective than a no-treatment control.

If it had been easier to recruit problem gamblers to treatment, an obvious analysis plan for study I would have been to power the study as a superiority trial to detect potential real differences in treatment effects between MI versus controls, CBGT versus controls, and MI versus CBGT. Little is still known about the relative effects of MI and CBGT in the treatment of gambling disorder, and such research would fill a gap in knowledge.

3.3 Recruitment, participants, and aspects of internal and external validity

Between June 2005 and December 2006, 198 treatment-seeking gamblers went through a 60- to 90-minute in-person interview at an outpatient dependency clinic in Stockholm, Sweden. Of these 198 individuals, 150 were included to be randomized to either MI, CBGT, or an eight-week-long waiting list and treatment thereafter. A total of 48 individuals were excluded. Exclusion criteria included suicidal ideation (n = 13), unwillingness to be randomized (n = 6), recently commenced medication for anxiety and/or depression or being in a parallel treatment for gambling problems (n = 6), not having an ongoing gambling problem (n = 5), primary drug and/or alcohol dependence (n = 4), ongoing severe depression (n = 3), unwillingness to participate (n = 3), ongoing bipolar disorder (n = 2), imprisonment (n = 2), inability to speak Swedish (n = 2) or incomplete self-report questionnaires (n = 1), and ongoing psychosis (n = 1).

The internal validity is critical and often said to be prior to external validity because an unambiguous finding must be presented before it can be generalized to people and settings other than those in the study. However, in psychotherapy research, external validity is very important too, because the results are supposed to be applied in everyday clinical practice. When designing a study, internal validity must be weighed against external validity. In study I, as in most randomized controlled trials, priority was given to internal validity to the detriment of external validity. A slightly different tradeoff regarding the exclusion criteria would have been beneficial for external validity, probably without degrading the internal validity markedly. Suicidal ideation is common among problem gamblers, and it was the most common exclusion criterion in study I (n = 13). One study found that gamblers who successfully achieved control over their gambling behavior had made fewer attempts to commit suicide in the past when compared to gamblers who could not attain control (Ladouceur, Lachance, & Fournier, 2009). Apart from this exception, there is little evidence for suicidal ideation being an obstacle in treatment (Merkouris et al., 2016). In other words, the exclusion of suicidal ideation was perhaps not necessary and has the disadvantage that it is more difficult to generalize the findings to everyday clinical practice.

Also, in other areas, we have reason to believe that the study participants differed from problem gamblers seeking treatment in general. Due to the exclusion criteria, none of the participants objected to randomization, which might have meant ending up on a waiting list lasting eight weeks; this may suggest that included participants were not desperate to get immediate treatment. None of the participants were diagnosed as having bipolar disorder or psychosis, nor had they recently commenced medication for anxiety or depression. Further, all of the participants had mastered the Swedish language well enough to complete a comprehensive assessment interview, a vital feature of clients that should facilitate treatment with either MI or CBGT (particularly if the therapist speaks Swedish during the sessions). Moreover, all of the participants managed to fill out self-report questionnaires, which can be

assumed to be a particularly important feature when participating in CBGT treatment.

It should also be noted that four persons were excluded due to primary alcohol or drug dependence and another three due to extreme, ongoing, severe depression. However, the mean score on The Alcohol Use Disorders Identification Test (AUDIT) for the study sample was 8.0 points for males and 6.0 for females, both scores on the lower boundary of Zone II in AUDIT, indicating risky alcohol habits. The corresponding figures for Beck's depression inventory (BDI-2) was 23.6, indicating moderate depression.

It would be particularly unfortunate if the study sample characteristics differed from those of problem gamblers seeking treatment in general, with respect to prognostic factors. Known prognostic sociodemographic factors for successful treatment outcome are male gender, older age, and being employed (Merkouris et al., 2016). Gambling-related prognostic factors for successful treatment outcome are lower severity of gambling symptoms, lower levels of gambling behaviors, and no gambling debts. Lower levels of depression and higher attendance in treatment, as well as being in the action stage of change, have also been found to be predictive for successful treatment outcomes (Merkouris et al., 2016). However, there is no obvious reason to believe that the study samples in studies I to III differ from other problem gamblers seeking treatment, regarding these prognostic factors.

In contrast to the rigid exclusion criterion regarding suicidal ideation, inclusion criteria linked to the severity of problem gambling were very generous. Participants with NODS scores ranging from 1 through 10 were included in study I. The generous inclusion may have created groups that were too heterogeneous with respect to levels of gambling problems, which may have hampered detection of potential real differences in efficacy between the three conditions. In the field of alcohol treatment, Gaume et al. (2016) found that only heavy drinkers were helped by MI. For participants who were not heavy drinkers, the treatment was even counterproductive, with worse outcomes at follow-up. Therefore, the diagnosis gambling disorder according to DSM-5 was used as an inclusion criterion in studies II and III.

3.4 The assessment interview

A cause for concern is what the 60- to 90-minute in-person assessment interview did to the participants. The interview was semi-structured, and the interviewers asked the same preprinted questions to all clients, but were free to ask follow-up questions if this was necessary to obtain a sufficiently comprehensive answer. Together, the client and the interviewer mapped the client's gambling behavior, consequences of gambling, and comorbid conditions as well as other information about the client's situation with regard to personal finances, employment, housing, and relationships. In some cases, clients gave short and concise answers to the questions. In other cases, clients responded with in-depth descriptions

of tragic experiences and thoughts about the values in life as well as expressions of commitment to change. At the end of the interview the clients were asked whether they wanted to have professional treatment for their gambling problems and whether they agreed to participate in a research study. In the qualitative evaluation of the study a number of clients took the opportunity to thank the interviewers for their kind and respectful attitude during the assessment interview.

It would probably be a step too far to say that the assessment interview was a motivational interview. Still, it was an interview conducted by respectful and sympathetic psychologists who wanted the best for the clients. Moreover, the interviewers let the clients uncover and map their gambling behavior and its consequences by answering preprinted questions, and in the end, all of the participants made a commitment to start treatment for their gambling behavior, by signing up.

Therefore, it is reasonable to assume that the assessment interview accounted for a certain degree of the treatment outcome. Even though all participants received the same dose of assessment interview, regardless of which condition they were assigned to, it can be argued that participants in the control group, at the time of post-treatment measurement, had gained most from the pre-treatment interview, given that the potentially therapeutic elements in the pre-treatment assessment interview were overlapped by components in the active treatments. Granted that this is true, the assessment interview probably contributed to decreasing the differences in outcome measures between the active treatment groups and the control group.

If the assessment interview accounted for a certain degree of the treatment outcome, it may also have implications for the generalizing of the results. In clinical practice, gamblers seeking treatment do not always go through such thorough assessment interviews before onset of treatment.

3.5 The MITI and the CLAMI instruments

A methodological issue in study III is the uncertainty associated with construct validity of the Motivational Interviewing Treatment Integrity (MITI) 3.0 (Moyers, Martin, Manuel, Miller & Ernst, 2007) and the Client Language Assessment in Motivational Interviewing (CLAMI) Miller, Moyers, Manuel, Christopher & Amrhein, 2007) instruments. In study III it was hypothesized that therapists' skills in MI are related to client language during sessions and ultimately to outcomes. However, the analysis is based on two coders' experiences of therapists' skills in MI, according to their individual interpretations of the criteria described in the MITI manual. The question is, then, how close were the coders' experiences of the therapists' skills in MI to the therapists' real skills in MI? Another important question is how

close were the coders' experiences of therapists' skills to the clients' experience of the therapists' MI skills? These questions are not easy to answer.

A good start is that the MITI instrument has shown good discriminatory validity and has proven to be reliable in previous research (Forsberg, Berman, Kallmen, Hermansson, & Helgason, 2008; Moyers, Martin, Manuel, Hendrickson, & Miller, 2005). The MITI is an established instrument for evaluating MI fidelity (Moyers, Rowell, Manuel, Ernst, & Houck, 2016). Also, in study III the inter-rater reliability for MITI was good. It is satisfactory that coders are consistent with each other on what are high and low empathy and MI spirit as well as frequencies of MICO and MIIN. However, there can be good inter-rater reliability without satisfactory construct validity of the measure. The fact that two coders think alike does not mean they think the same as the client who participated in the session, and it is the client's perception of and responses to the therapist's abilities, such as showing empathy, that matters (Moyers & Miller, 2013). Continuous and successful efforts were made within the research project to train the coders in being consistent with each other, but we have not done anything to verify whether the coders' consistent picture of therapists' skills match the clients' experiences. Therefore, the question of how close the coders' experiences of the therapists' skills were to the clients' experiences of the therapists' MI skills will largely remain unanswered, at least for the global variables empathy and MI spirit. Verbal behaviors like questions and reflections are objectively observable and easier to estimate with good reliability, but are on the other hand less informative.

A similar reasoning can be applied to the CLAMI instrument, which identifies, categorizes, and counts the client's statements of desire, ability, reasons, and need to change a specific target behavior, or conversely, desire, ability, reasons, and need to maintain the status quo. The instrument also counts commitments to change, or not to change. In study III, the categories desire, ability, reasons, and need were merged into the two divisions preparatory change talk and sustain talk, while commitment to change remained as its own category. As expected, following the merger of subcategories, the coders obtained good inter-rater reliability. There is still reason to consider how sure we can be that coders captured the essence of what the speaker expressed. How did the coders interpret ironic statements, hypothetical statements, or other statements that might not have been meant to be taken literally? Moreover, body language and facial expressions are important means of expression for many people. These go beyond the scope of CLAMI coding because the coders only focus on what is conveyed by the client's voice.

In summary, we cannot expect the MITI to reflect therapists' skills in MI with complete accuracy. Neither can we expect the CLAMI to completely accurately reflect clients' statements for or against change, and we do not know how much the measurement results differ from reality. Still, several studies have shown that there is an association between the

components measured in MITI and CLAMI as well as between MITI, CLAMI, and treatment outcome (Magill et al., 2014; Miller & Rose, 2009), which suggests that the instruments used to measure these components have acceptable validity.

A final methodological concern related to study III is the exclusion of nine trial participants due to missing audio recordings of therapy sessions because of technical failure or human error, making it impossible to assess therapists' and clients' in-session verbal behaviors. The question must be asked whether this loss was completely random, or if, for example, it was mostly "bad-MI" conversations that was not recorded. All four therapists had failed audio recordings, which in its way is better than only one or two of the therapists having had failed audio recordings. Old-fashioned cassette players were used to record the sessions, and the most common reasons for failure were having no available tapes or an improperly connected microphone cord.

3.6 The treatments

In study I and study II, MI and CBGT were compared. This involved a comparison between MI components described by Miller and Rollnick (2002) versus a set of cognitive behavioral therapy (CBT) components composed for the treatment of problem gambling. Moreover, it was also a comparison between individual treatment versus group therapy. Finally, it was a comparison between different treatment doses, approximately 24 hours of CBGT versus 4 hours of MI. The analyses conducted in studies I and II cannot give clear answers on whether the methods differ in efficacy, or whether individual treatment is better than group therapy, or whether higher-dose therapy is better than smaller doses. The only question the analysis can shed some light on is how effective a small-dose individual MI is compared with a large-dose of group-based CBT. However, this is still interesting, because MI and CBGT are two common treatments for gambling problems.

The therapists who delivered the MI as well as the therapists who delivered the CBGT treatment were both competent and highly motivated. Two of the therapists in the MI team had authored the treatment manual that was used in the study (Forsberg, Forsberg & Knifström, 2010). Likewise, one of the CBGT therapists had authored the CBGT manual (Ortiz, 2006). All therapists received regular supervision. All sessions were audio recorded, and the therapists knew that a random sample of the audio recordings would be assessed for treatment fidelity. Overall, this means that the therapists who delivered treatment in these studies probably were more motivated to show high fidelity to treatment compared to therapists in the field of gambling treatment in general, which suggests that one must be careful when generalizing the results. There are basically two ways to handle the generalizing problem. One way is to make the study setting more similar to everyday clinical practice, by for example including a wider selection of participants. The other way is that in some ways trying to change clinical practice so that it becomes more similar to the study setting, for example by audio recordings of sessions and regular supervision.

3.7 Ethical aspects

Ideally, non-inferiority trials should be used when it is unethical to randomize seriously ill patients to a no-treatment control group. Instead, a new treatment is compared to an established treatment, and the aim is to prove that the new treatment is not inferior to the established treatment. However, in study I, a reverse ethical issue arises. Was it ethical to randomize patients to a no-treatment control group and then refrain from conducting a superiority trial to extract as much as possible from the collected data? A pragmatic answer to that question would be that the choice of using a non-inferiority design when comparing MI and CBGT facilitated the comparison between the active treatments and the control group, so that the data collected were used in the best possible way, given the difficulty of recruiting a larger number of study participants needed to power a superiority trial.

Important ethical principles in psychotherapy research are that participation should be voluntary, that the participants should feel free to discontinue participation whenever they want, and that it should not affect their chances of getting the best possible care. These principles were taken seriously and were followed, not only by collecting consent from each participant but also by other actions. Clients who opposed randomization were free to choose treatment and consequently were excluded from the study. Clients who were excluded for other reasons were often offered the same treatment as the study participants, in some cases even an expanded individual treatment. Some excluded clients were referred to other clinics in addiction services or guided to seek the appropriate care they needed.

3.8 Statistical analysis in the supplementary analysis

The supplementary analysis for studies I and II was done with a generalized estimating equations model with an exchangeable correlation structure and a semi-robust estimator.

4   RESULTS AND DISCUSSION

4.1 The efficacy of MI and CBGT

Study I suggests that it is better for gamblers seeking treatment for varying severity of gambling problems, (NODS score 1 – 10) at baseline, to be assigned to active treatment in the form of either MI or CBGT, compared to a no treatment control group. Participants who got active treatment reported statistically significantly fewer symptoms of gambling problems compared to the control group one week after treatment. However, a supplementary analysis including all available data for randomized participants with gambling disorder (NODS score 4 – 9) at baseline (n = 117) showed a non-significant difference between the two merged active treatments and the control group where the active treatment scored 1.15 higher on the NODS at post treatment compared to controls (p = 0.142). CBGT had a non-significant minimal worse outcome by 0.25 score at post treatment versus controls (p = 0.768), while MI showed a significant worse outcome by 2.18 scores at post treatment (p = 0.010) versus controls. The difference between MI and CBGT was also significant, with MI having a score 1.93 points higher at post treatment compared to CBGT (p = 0.010). The supplementary analysis is contrary to previous research that suggests that CBT is particularly effective in reducing symptoms of gambling disorder (Cowlishaw et al., 2012). The results regarding MI is more in line with previous research suggesting that MI do not seem to be effective in reducing symptoms of gambling disorder (Cowlishaw et al., 2012) but rather is an efficacious treatment for reducing frequency of gambling and money lost, at least in the short term (one to three months); the long term efficacy is unclear (Yakovenko et al., 2015). However, the supplementary analysis is contrary to previous research that suggests that MI may work better for clients with severe problem levels in the area of addiction (Gaume et al., 2016).

Why were there such diverse results in study I and the supplementary analysis regarding the efficacy of MI and CBGT compared to the control group? One may think of two main explanations. Firstly, in study I, the active treatment arms may have had the advantages of selections biases introduced by attrition, which was not the case in the supplementary analysis where an intention to treat approach was applied. The supplementary analysis included the 23 randomized participants (mean NODS score = 5.52) that never started active treatment and therefor was excluded in study I. Secondly, 33 of the randomized participants were excluded in the supplementary analysis due to not meeting the criteria for gambling disorder according to DSM-5. In other words, participants in the supplementary analysis had more severe symptoms than those in study I, which may have contributed to reduce the effect, in particular for the MI condition (Cowlishaw et al., 2012).

Table 1. Therapists adherence to MI assessed with MITI 3.0 (*n* = 52)

Global variables	Beginning Proficiency threshold*	Median (IQR)	Sessions above the recommended threshold (%)
Empathy	3.5	4 (1)	83
MI Spirit	3.5	3.67 (0.67)	56
Collaboration	3.5	4 (0)	89
Autonomy support	3.5	3 (1)	35
Evocation	3.5	4 (1)	52
Direction	3.5	4 (2)	75
Behaviour indices		**Mean (SD)**	
Ratio Reflections to Questions	1	3.45 (2.15)	94
% Complex Reflections	0.40	0.41 (0.17)	46
% MI Adherent Utterances	0.90	0.61 (0.40)	41
% Open Questions	0.50	0.29 (0.14)	7

MI = Motivational Interviewing, MITI = Motivational Interviewing Treatment Integrity, IQR = Interquartile range. * Beginning Proficiency threshold according to the MITI-manual (Moyers et al., 2007). SD = Standard Deviation

Therapists' adherence to the methods

Considering the results, one might wonder if the participants really got the treatment being studied. In the MI condition, MITI coding revealed that it was great variation of adherence to the MI method in the 54 sessions coded using MITI-3.0, see Table 1. As shown in the table, the therapists seem to master the relational components collaboration and empathy quite well in most of the sessions, like complex reflections. However, the remaining technical components, using MI adherent utterances and refrain from using MI non adherent utterances, asking open ended questions and evoking skills (which is a global technical component) were below the thresholds for beginning proficiency in a large part of the sessions. Moreover, only two (2) of the 54 sessions reached beginning proficiency in all variables. In an efficacy study, it would be desirable if all MI sessions reached beginning proficiency in all variables. One can of course not expect clients to benefit from a treatment that they never got. Future research should examine the skills required on delivered MI for the treatment to show effect on outcomes.

The CBGT condition included techniques that have proved effective in other studies (Gooding & Tarrier, 2009). According to the treatment manual (Ortiz, 2006), a total of 375 agenda points should be covered. The results showed a 93% adherence to the manual. However, we know nothing about how skillfully therapists delivered the various CBT techniques that were included in the intervention.

Let us assume that the participants' ambivalence was resolved already during the assessment interview, or even before, and they were committed to do something about their gambling behavior before starting the active treatments. Then, there is an obvious risk that the MI treatment did more harm than good, starting from scratch by exploring the pros and cons with gambling, including confirming and reinforcing the participants' talk about hardships and difficulties with moderation of, or abstinence from gambling, which may lead to sustain talk and in the end worsened treatment outcome (Magill et al., 2014), as also the supplementary analysis suggests. The MITI-3 was used to evaluate therapists' skills in MI. Unfortunately, the instrument does not measure whether the therapists' statements raises sustain talk or change talk from clients, which is done in the latest version of the instrument MITI-4 (Moyers et al., 2016) and MI Sequential Code for Observing Process Exchanges (SCOPE) (Martin, Moyers, Houck, Christopher & Miller, 2005). In future research, it would be beneficial to use coding instrument that can measure whether the therapists' statements raise sustain talk or change talk from clients.

Looking at the results of the supplementary analysis of study I, CBGT is less likely to cause setbacks for participants' behavior change. However, the method seems to have little to offer people with gambling disorder in addition to an assessment interview.

The 6- and 12-month follow-ups

In study I, both MI and CBGT produced significant within-group decreases on NODS scores and gambling behavior outcome measures up to the 12-month follow-up. However, no differences were found between MI and CBGT at any point in time. A supplementary analysis using an intention to treat approach and only included participants with gambling disorder (NODS score $4-9$) (n = 88) confirm these within-groups effects for both MI and CBGT, no differences were found between MI and CBGT at the 6- and 12-month follow-ups in the supplementary analysis.

Treatments sensitivity to delayed treatment

Further complementary analyses revealed that participants randomized to MI after nine weeks on the waiting list scored 2.4 points higher on the NODS at the 12-month follow-up compared to participants who were randomized to MI and started treatment within a week after the assessment interview (p = 0.002). It is thus advantageous to start MI immediately when the patient seeks treatment.

On the other hand, no differences were detected between those who were randomized to a nine week waiting list before CBGT treatment and those who received CBGT within a week after the assessment interview. The result is fortunate, given that it often, especially in smaller towns, takes time to recruit enough clients to fill a therapy group.

4.2 Sub-analysis of participants with risky alcohol habits

In study I we saw that the difference in effect between the active treatments and the control group for the 127 participants included in the study was small. The supplementary analysis only including persons with gambling disorder revealed that an assessment interview plus waiting list actually was more helpful for the gamblers than an assessment interview plus active treatment. However, those conclusions are based on NODS mean scores of the participants in each intervention group. The mean scores do not tell us anything about how individuals belonging to different subgroups responded to the interventions. The aim of study II was to investigate whether participants with gambling disorder and risky alcohol habits responded differently to MI and CBGT. The interaction between treatment and alcohol habits in an Analysis of covariance (ANCOVA) model was significant [$F (1, 48) = 5.39$; $p = 0.025$], and suggests that the effect of treatment depends on the participant's alcohol habits. Participants with contemporary risky alcohol habits were better helped by MI, while those without risky alcohol habits were better helped by CBGT. A supplementary analysis using all available data revealed a three-way interaction effect between MI treatment, time and risky alcohol habits of 2.48 lower score at the 6-month follow-up ($p = .089$). Unfortunately, statistical significance was not reached in this more advanced model but the estimate is high and in the same direction as in the simpler ANCOVA model.

Considering that the control group was found to be better than the active treatments at the post treatment measurement, the result must be interpreted with caution. It cannot be excluded that a no treatment control would have outperformed the active treatments even in this analysis and it is likely that natural recovery accounts for a significant share of the symptom reduction.

The finding may be useful in clinical practice if the health care provider has the means to screen for alcohol habits and is able to offer patients either MI or CBGT. An additional value is that the finding helps to dispel the myth that MI is less effective compared to other interventions when treating complex cases with severe comorbidity.

The finding also indicates that a comprehensive CBT group therapy tailored to treat gambling disorder is more helpful than a brief MI intervention for clients with a gambling problem but no risky alcohol habits.

A limitation of the comparison between CBT and MI is that CBT was given as a group treatment, while MI was individually based. Ideally, it would have been much more useful from the view of treatment development to compare MI with individual CBT, with comparable potential to customize the treatment to the clients' needs.

Moreover, the usefulness of the finding may be limited by the fact that in many rural areas there is no option available to choose between MI and CBGT. Another essential question is whether it is a good idea to choose between MI and CBT when it is possible and perhaps even the best strategy is to combine the two treatments.

4.3 Combining MI and CBGT

In clinical practice, there is no need to choose between MI and CBGT, if there is expertise to offer both, or elements of both.

Considering that the methods have such different content, there is reason to believe that they operate and contribute differently to behavior change. It can be speculated that MI contributes to a large proportion of ambivalent problem gamblers realizing that they want to stop or change their gambling behavior. MI also helps them believe that they are able to implement such a change. Then, a somewhat smaller proportion of these people actually have the capacity within themselves to go through with such a change on their own and make it. CBGT, on the other hand, to speculate further, does not help people to solve their ambivalence about whether they want to make a change or not. Instead, it is hypothesized that the strength of CBGT is that the method offers new tools to handle gambling behaviors, and ultimately new experiences, to those participants who are motivated enough to turn up at the sessions.

This reasoning suggests that the two treatments should be combined. When MI has been used as a pre-treatment to CBT as well as other interventions, previous research has reported on large effects of MI in promoting treatment engagement, retention, and adherence (Hettema, Steele & Miller, 2005). Therefore, treatment programs for people with gambling disorder could start with one or two MI sessions to motivate them to change harmful gambling behaviors. After the MI sessions a few clients may come to the decision that their gambling behavior does not cause them enough harm to make a change, while other would be committed to implementing a change on their own. A third group of clients who need more support to manage a behavior change, or are ambivalent because they do not know if they are able to make a change on their own, would be referred to CBT or CBGT. The CBGT program can offer the clients a broad variety of education, exercises, and home assignments aimed at helping the clients to stop or control their gambling behavior. An individual CBT treatment approach can also offer tailored treatment programs. MI can be integrated into the CBT, so that when the client is ambivalent in his or her process of change, MI can be applied.

4.4 Processes in MI

Study III tested the hypothesized relationships among process and outcome variables in the MI model stated by Miller and Rose (2009), with the addition of a hypothesized pathway from MI-inconsistent behaviors to client sustain talk and from sustain talk to worse treatment outcome (Magill et al., 2014). A total of 32 participants with gambling disorder was analyzed using a structural equation model (SEM).

The hypothesized pathways are showed in Figure 2. Significant pathways that support the hypothesized model are illustrated with green arrows. Significant pathways that contradict what was hypothesized are illustrated with red arrows, and non-significant pathways are illustrated by black arrows.
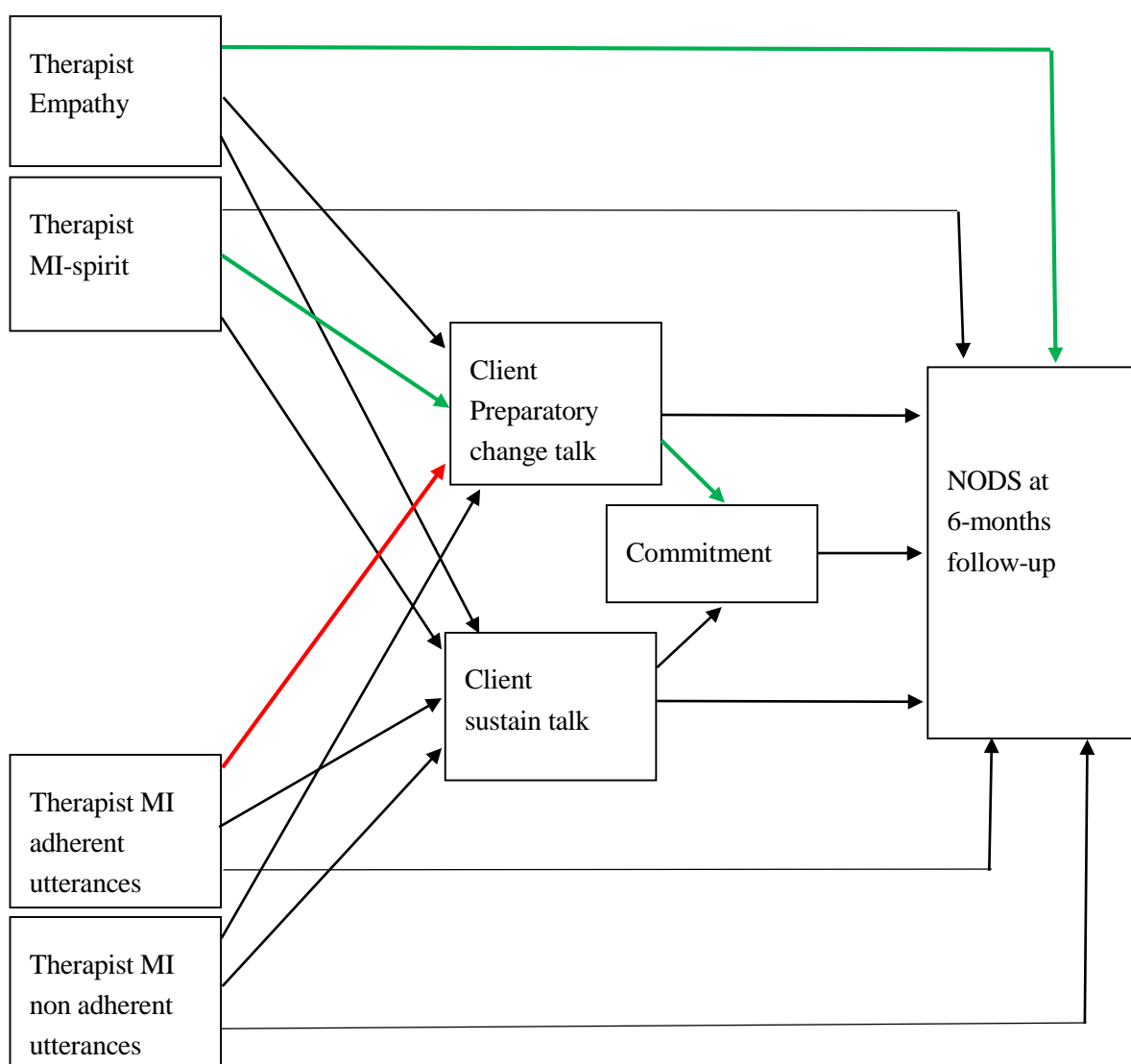
Figure 2. Figure 1. Conceptual diagram of the hypothesized pathway model.
NODS = National Opinion Research Center DSM-IV Screen for gambling problems

As evident from Figure 2, most of the hypothesized pathways were non-significant. However, there was a significant main effect between empathy and outcome, indicating that higher scores on empathy reduced symptoms of gambling disorder at six-month follow-up. There were also direct effects between MI spirit and preparatory change talk, and between preparatory change talk and commitment language, demonstrating that high scores on MI spirit increased the frequency of preparatory change talk, which in turn increased the probability of commitments to occur. Finally, MI adherent utterances showed a negative direct effect on clients' preparatory change talk, suggesting that therapists' use of MI adherent utterances decreased the frequency of preparatory change talk.

The results in study III support the MI model fragmentarily. The significant pathways (green arrows) in study III lend support to the hypothesized MI model (Miller & Rose, 2009), like results from other studies on processes in MI that turned out to be significant. However, looking at Figure 2, it is obvious that study III produced more non-significant results (with minimal effect sizes) that do not fit into the MI model than results that fit in. In the literature one sees that many studies examining the processes of MI have found fragmentary support for the hypothesized model (Romano & Peters, 2016). One can also see that many of these studies have produced more non-significant result, (Gaume et al., 2008; Magil et al., 2014; Romano & Peters, 2016) or even contradictory results that do not fit into the MI model (Magill et al., 2014), compared with results that support the model. It is often difficult to publish studies that do not present any significant results; therefore, it cannot be excluded that there are a number of unpublished analyses of collected data that provide no support at all for the model. On the other hand, there might also be a number of unpublished reports with interesting effect sizes supporting the model, which could not be published because the results were not statistically significant, perhaps due to small numbers of participants.

Regarding reported results on components associated with in session client language, there might be a risk that reported significant results are a harvest of mass significance. In the literature, client changes have been analyzed as the individual components desire, ability, reason, need, commitment, action, and taking steps. The components have also been analyzed in a number of different combinations or merged into a single component. When clients instead use these components to express that they do not want to change, the components turn into sustain talk. Like change talk, sustain talk has been analyzed as individual components or in different combinations, or merged into a single component. Furthermore, one may choose to analyze the frequency of client change talk and sustain talk or the strength of it. Moreover, in some studies change talk and sustain talk were analyzed separately, while in other studies they were analyzed on the same scale, where sustain talk represented negative values on the scale and change talk positive values. Finally, variables can be analyzed during the entire session or in selected sections of the session. If one analyzes a large number of these possible combinations of change talk and/or sustain talk, it is likely that at least one, or perhaps even a few, of these combination becomes significant by chance. This would be less of an issue if it

were the same components that proved to be significant in the majority of studies, but it is hard to see that this is the case.

Theoretically, there is the same problem of mass significance when analyzing therapist variables, but here it is easier to see a tendency that it is often the same components, MIIN, MICO, and empathy, that become significant in different studies (Magill et al., 2014; Romano & Peters, 2016)

When looking at the results of study III together with other studies supporting different parts of the MI model, and considering the risk of mass significance, change talk does not seem to be an obvious, reliable marker for successful treatment outcome for a broad category of patients in the treatment of addictions (Magill et al., 2014; Romano & Peters, 2016). If it is the case that change talk is not an obvious, reliable marker of behavior change, then it should perhaps be less used as such. Good exhibited skills in MI seems to be related to successful outcomes with varying rates of client change talk during the sessions. On the other hand, sustain talk finds strong support in previous research (Apodaca & Longabaugh, 2009; Magill et al., 2009), even though the component is not significant in study III.

MI in continuous development

MI has always been and still is a method in continuous development. The description of the method has gone through radical changes in recent years, using new concepts. The latest version of MI method, often referred to as MI-3, described by Miller and Rollnick (2012), together with the latest version of measuring MI integrity (Moyers et al., 2016) is the basis for today's process research. which means that the support for change talk as a mediator may appear different in the near future. In MI-3, the underlying spirit of MI has been refined and redefined into the components compassion, acceptance, collaboration, and evocation. Acceptance is further divided into the subcomponents affirmation, absolute worth, autonomy, and accurate empathy (Miller & Rollnick, 2013). I conclude that the introduction of compassion and acceptance both expands and refines the description of what the therapist is expected to convey to the client during the session, to further strengthen the approach previously included in the concept of empathy.

Another welcomed change is the abandonment of the idea that the treatment should be carried out in two stages. During the first stage, the client's ambivalence should be explored and resolved, and in the second stage, the therapist should strengthen the client's decision for behavior change and establish a plan for change (Miller & Rollnick, 2002). However, it is my opinion that many training programs for MI have almost exclusively focused on step 1, which together with other factors has led to that many MI practitioners having had a tendency to get stuck in step 1, even when the client has moved on to step 2. This may in turn have

contributed to excessive exploration of clients' ambivalence even after it has been resolved, generating unnecessary setbacks in the process of behavior change. Unfortunately, this was often the case in the MI sessions included in the present thesis, according to conversations with the coders who coded the MI sessions. Steps 1 and 2 have been replaced by the four processes engaging, focusing, evoking, and planning. The process of planning requires a prior process of evoking, which in turn requires focusing and engagement; thereby, all four processes may be present simultaneously during an MI session (Miller & Rollnick, 2013).

Another important change is to focus on asking questions with the intention of eliciting change talk, rather than focusing on asking any kind of open-ended question rather than a closed question. During an MI session in the treatment of gambling disorder an open question like "What would you do if you won a million dollars?" probably produces less change talk than a closed question like "Would you be able to spend more time with your kids if you stopped gambling?" Similarly, it is now advocated that therapists should put a special focus on reflecting on change talk, rather than just producing more complex reflections than simple reflections, because there is no reason to believe that complex reflections in general lead to more change talk. Complex reflections of sustain talk seems to lead to more sustain talk (Fischer & Moyers, 2014) which probably was often the case when practicing older versions of the MI method, since it was recommended that both negative and positive consequences of a problem behavior should be explored more equally. This was frequently done in the MI sessions included in the present thesis according to conversations with the coders who coded the MI sessions. Further research based on these new developments should be carried out and followed with great interest.

4.5 Conclusions

The adherence to the MI method in study I – III, presented in the present thesis was poor. Therapist use of MI adherent utterances and refrain from using MI non adherent utterances, asking open ended questions and evoking skills were below the thresholds for beginning proficiency in a large part of the sessions. This suggests that a considerable part of the participants randomized to MI was not really treated with MI, but rather a client centered conversation about consequences of gambling.

MI treatment including a significant proportion of sessions lacking competent use of MI adherent methods, evoking skills and autonomy support might be harmful for people with gambling disorder who voluntarily sign up to treatment after an assessment interview.

CBGT sessions is probably not harmful for people with gambling disorder who voluntarily seek treatment, but the method seems to have little to offer people with gambling disorder in addition to an assessment interview.

MI is more likely to be helpful if the intervention is given without delay to clients seeking help for gambling disorder. Starting MI treatment about nine weeks after signing up for treatment leads to poorer outcomes. Treatment outcomes for CBT does not seem to be affected by whether clients first have to wait up to nine weeks to get the treatment. The result regarding CBGT is fortunate, given that it often, especially in smaller towns, takes time to recruit enough clients to fill a therapy group.

The result of an AUDIT screening prior to the start of treatment for gambling disorder can provide guidance in the choice of treatment. Patients with gambling disorder and risky alcohol habits are more likely to be helped if they are referred to MI treatment compared to CBGT, while those without risky alcohol habits are likely to be best helped if they are referred to CBGT.

In clinical practice, therapists' skills in demonstrating empathy seems to be a promising therapeutic component linked to successful treatment outcomes when treating gambling disorder.

Frequencies of clients' change talk during MI sessions do not seem to be reliable as a single marker for treatment outcome. Therefore, it might be useful for clinicians to keep in mind that good exhibited skills in MI, such as showing accurate empathy, might be related to successful outcomes even when clients do not respond with high rates of change talk, during the session.

The impact of assessment interviews on gambling outcomes should be investigated further as well as benefits of actively using MI skills during an assessment interview.

5 ACKNOWLEDGEMENTS

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