Research Article:

The Efficacy of Motivational Interviewing and Adapted Motivational Interviewing as an Eating Disorder Intervention: A Scoping Review

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Abstract

In any given year, approximately 25 million Canadians aged 15 years and older are at risk for developing an eating disorder (ED). Eating disorders (EDs) have the highest mortality rate among all mental disorders and patients have been found to be ambivalent to change. Thus, recent attention has been given to interventions focusing on enhancing patients' readiness to change. To that end, the two-fold purpose of this scoping review was to: (1) ascertain if MI and/or adapted MI improved ED patients' readiness to change, and (2) examine the effectiveness of MI and adapted MI on improving eating pathology. Ten studies were included in this review based on the inclusion criteria. Seven studies reported MI and adapted MI increased readiness to change from pre- to post-treatment and/or follow-up. Of these studies, five only found increases in readiness to change in the treatment group. In opposition to the other findings, Treasure et al. reported a significant increase in readiness to change in both groups, with this increase being greater in the comparison group. Three studies found non-significant changes in readiness to change; Weiss et al. reported no changes in either treatment or control group while two other studies found non-significant changes in readiness to change in both groups. Accordingly, there is potential for MI to be a successful intervention for ED patients'; however, more research is needed to develop a stronger evidence base.

Introduction

In any given year, approximately 25 million Canadians aged 15 years and older are at risk for developing an eating disorder (ED).¹ Eating disorders (EDs), defined as a disturbance in eating patterns and body image², have the highest mortality rate among all psychological disorders³ at a rate of 5, 3, and 1.7 per 1000 people for Anorexia Nervosa (AN), Eating Disorders Not Otherwise Specified (EDNOS), and Bulimia Nervosa (BN), respectively.⁴ EDs are considered a form of 'slow suicide'⁵ and fall under the 10 most prominent causes of long-term disability in young women.^{3,6} ED patients face psychological complications such as depression, anxiety, and obsessive-compulsive disorder³ as well as physiological complications such as heart conditions and kidney failure⁷.

These complications take an enormous personal toll on both patient health (i.e. long-term disability, and premature death) and productivity (i.e. reduced time spent in school, work, etc.).^{3,7} The economic burdens of EDs are the result of both direct (i.e. hospitalization, rehabilitation, etc.) and indirect (i.e. inability to work, premature death, etc.) costs.³ The cost of long-term disability benefits for British Columbia citizens with AN varied from an annual low of \$2.5 million to a high of \$100 million, with the latter being 30 times the annual ED tertiary care treatment cost.⁸ Moreover, a study conducted in the United States found the cost per abstinent participant at the end of follow-up for a 62-week Cognitive Behavioral Therapy (CBT) treatment was \$20,317.⁹ With healthcare budgets decreasing,⁹ there is a need for researcher focus on creating more clinically and financially effective ED treatments.³

ED intervention attrition rates have been higher than those of other psychiatric interventions¹⁰, and ranged between 30% and 70%.¹¹ Prochaska & DiClemente¹² have attributed this attrition to the focus on reducing eating pathology while negating the importance of resistance to change; resistance to change is important in ED patients as they are particularly ambivalent to change.¹³ Moreover, readiness to change has predicted ED treatment outcomes such as eating pathology and dropout rates.^{13,14} One way to conceptualize readiness to change is through the use of the Transtheoretical Model (TTM), which defines change as an evolving process

with five stages of readiness to change:

- (1) precontemplation (resistance to change),
- (2) contemplation (thinking about change),
- (3) preparation (intending to change),
- (4) action (active change), and
- (5) maintenance (preventing relapse).¹⁵ Rather than following a linear progression, clients often vacillate between stages.¹⁴

Over the past two decades,¹⁶ researchers have advocated for using motivational treatments that focus on enhancing patients' readiness to change.^{13,17} Motivational Interviewing (MI) is a therapeutic client-centered approach, where the client finds intrinsic motivation to change by exploring his/her values and goals.¹⁸ Foundationally, MI is built on: showing empathy, recognizing and building discrepancy, avoiding hostility, encouraging self-efficacy, and working through resistance.¹⁸ An inadequate research base¹⁸ on the efficacy of MI on EDs, including varying results,¹¹ makes it difficult to ascertain possible benefits; more research is needed to determine whether MI is successful in treating EDs.¹⁸ To that end, the purpose of this scoping review was to assess the effectiveness of MI and adapted MI on readiness to change and eating pathology in ED interventions.

The primary outcome measure of this review was readiness to change, with the specific goal of ascertaining if MI and/or adapted MI altered patients' readiness to change. For the purpose of this review, the terms readiness, motivation and confidence to change will be used interchangeably. The secondary outcome measure was eating pathology, specifically determining whether MI and/or adapted MI altered patients' eating pathology. For the purposes of this review, eating pathology was defined as any ED symptom listed in the *Diagnostics and Statistical Manual of Mental Disorders-IV*.²

Methods

PubMed, PsychInfo, Google Scholar, and the online Western University Library catalog were searched for the following terms: "motivational interviewing", "motivational enhancement therapy", "motivational therapy", "motivational counseling", "motivational intervention", "motivation", "anorexia", "anorexia nervosa", "bulimia", "bulimia nervosa", "binge eating disorder", and "eating disorder". The search yielded 16 studies. Reference lists were

subsequently hand searched and three additional articles were identified.

The a priori inclusion criteria were: (a) studies were available in English; (b) participants were at threshold (meeting full DSM-IV criteria), or at sub-threshold (not meeting full DSM-IV criteria, but showing symptoms) for an ED; (c) studies included a control or comparison group; (d) studies included readiness to change as an outcome measure; (e) the intervention was intended for ED patients (i.e. the intervention was not directed at parents, caregivers, etc.); and (f) studies incorporated some principles of MI in their intervention. For the purposes of this review, adapted MI utilized MI techniques while incorporating other non-motivational aspects (i.e. motivational enhancement therapy (MET) with CBT).¹⁹ The impact of brevity on the implementation of MI is unknown²⁰; therefore, any interventions positing the use of MI regardless of length as either a: (a) stand-alone intervention, (b) pre-treatment intervention, or (c) combined intervention, were included in this review. As such, motivational interventions included MET, adapted motivational interviewing (AMI), motivation focused treatment (MFT), or readiness and motivation therapy (RMT). Studies were excluded if they did not meet the aforementioned criteria.

Specific readiness to change outcome measures included: Readiness and Motivation Interview (RMI), University of Rhode Island Change Assessment Scale (URICA), Anorexia Nervosa stages of change questionnaire (ASNOQC), Motivation to change scale (MTC), Pros and Cons of Eating Disorders Scale (P—CED), and Stages of Change Questionnaire for Eating Disorders (SOCQ—ED). Outcome measures for eating pathology included: Eating Disorder Examination—Questionnaire (EDE—Q), Eating disorder inventory 2 (EDI—2), Eating disorders examination (EDE), Pros and Cons of Eating Disorders Scale (P—CED), body mass index (BMI), Eating Disorder Diagnostic Scale (EDDS). When effect sizes were reported, thresholds for small, medium, and large effect sizes were 0.20, 0.50, and 0.80, respectively.²¹ The Arksey and O'Malley²² scoping review framework was used as a reference tool for data extraction. A scoping review method was chosen over other methods since it addresses broad topics with multiple study designs in an area that has not been comprehensively studied.²²

Results

Based on the aforementioned criteria, 10 studies were included in this review. The results are presented in Table 1 (Appendix A) and amalgamations of results for each outcome measure are further described below. Nine studies measured eating pathology, and five discussed these results in terms of isolated EDs (i.e. AN, BN, or binge-eating disorder [BED]); no studies measured eating pathology results solely for EDNOS.

Readiness to Change

Readiness to change significantly increased in 70% of studies, while two other studies reported non-significant increases, and one study reported no change. Seven studies reported that MI and adapted MI significantly increased readiness to change from pre- to post-treatment and/or follow-up;^{11,13,23-26} five found increases only in the treatment group^{11, 23-26} with two reporting a large effect size,^{23,26} another reporting a medium effect size,²⁵ and another reporting a small effect size.²⁴ No effect size was reported for the Allen et al.¹¹ study. Moreover, Geller et al.¹³ reported a significant increase in readiness to change in both groups at both 6-week and 3-month follow-up; however, the control group was significantly more ambivalent to change comparatively. Although Treasure et al.²⁷ found an overall significant increase in participants moving to the action stage in both the treatment and comparison groups, this increase was higher in the comparison group.

Of the three studies that did not report significant changes, Weiss et al.²⁸ reported no change in either group, and two studies^{17,18} reported non-significant increases in readiness to change. Interestingly, Dean et al.¹⁸ found that the non-significant increase was only maintained in the treatment group at follow-up. Similarly, Wade et al.¹⁷ reported a non-significant increase in motivation to change at 2-week follow-up, which subsequently decreased at 6-week follow-up for both groups, and remained above baseline for the treatment group only.

A sub-analysis was conducted to assess which motivational intervention was most effective at increasing readiness to change. AMI²³ and MET²⁶ interventions resulted in large positive effects on readiness to change in the treatment group. Alternatively, Hötzel et al.²⁴ showed only a small significant increase in readiness to change in the MET intervention group. Contrastingly, Treasure et al.²⁷ showed an opposite trend, in that the control group was

more efficacious in reducing readiness to change than the MET group.

Eating Pathology

Anorexia Nervosa: Two studies measured the efficacy of MFT¹¹ and MI¹⁷ on AN. Allen et al.¹¹ reported a significant decrease, and Wade et al.¹⁷ reported a non-significant decrease, in eating pathology in both treatment and comparison groups (at post-treatment and two-week follow-up, respectively). Interestingly, the decrease found in the Wade et al.¹⁷ study continued in the treatment group whereas it increased in the control group between two- and six-week follow-up.

Bulimia Nervosa: Two studies measured the efficacy of MFT¹¹ and MET²⁷ on BN. Both Allen et al.¹¹ and Treasure et al.²⁷ reported a significant decrease in overall eating pathology in both groups at post-treatment where as Treasure et al.²⁷ reported no significant difference between groups.

Binge-eating Disorder: Cassin et al.²³ reported significantly more participants in the treatment compared to control group decreased binge-eating frequency at four, eight, and 16 weeks. In addition, significantly more participants abstained from binge eating (zero eating binges within a two month period) in the treatment group at a medium effect size. As well, significantly more participants no longer met the BED criterion in the treatment group.

Discussion

This scoping review primarily examined the effectiveness of MI and adapted MI in improving readiness to change among ED patients', with a secondary purpose of determining whether MI or adapted MI improved eating pathology. Despite the recent interest in using motivational interventions to treat EDs,¹⁶ only 10 studies met inclusion criteria. Motivational approaches in these studies laid on a continuum, from MI alone to utilizing overarching principles of MI to guide the intervention in conjunction with other therapeutic approaches.

Concerning readiness to change, there is evidence for the use of MI and adapted MI in ED interventions in terms of increasing patients' readiness to change, since the majority of the studies (70%) found a significant increase in readiness to change. However, since only half of the studies found improvements solely in the treatment group, a definitive conclusion on whether results lie in favor of using MI over other interventions was not reached. In addition,

inconsistent findings from the sub-analysis provided no evidence on which type of motivational intervention was most efficacious at increasing readiness to change in ED patients.

With regards to eating pathology, only Cassin et al.²³ reported that significantly more BED participants in the treatment group reduced their eating pathology compared to the control group. While other studies found significant improvements in eating pathology for both AN^{11,17} and BN^{23,26} patients, these changes were not statistically significant between groups. Thus, if the aim was to decrease eating pathology in BED patients, then motivational interventions may be most efficacious at doing so; however, if other eating disorders are present (i.e. AN, BN), then other types of interventions may be just as effective (i.e. CBT^{11,27}).

Limitations and Future Directions

There were limitations in this review's inclusion criteria and methodology. Within this review, the inclusion criteria of English studies and a control/comparison group, which were used to decrease the risk of bias, may have caused a selection bias, and possibly limited the results.

Concerning methodology, the internal content validity of the reviewed studies was a concern as many measures were dependent on self-reports and may have been subject to a social desirability bias when administered by intervention staff (e.g. Readiness and Motivation Interview;¹¹ Timeline Follow-Back Interview²³). In addition, the results for different EDs were often grouped together, which made it difficult to determine if MI or adapted MI was effective for all EDs or for a particular ED. Moreover, adapted MI interventions were not operationalized, which made it difficult to determine the extent of MI used in each intervention. Researchers should improve their intervention descriptions with the use of fidelity measures and can do this by using the Revised Global Scales: Motivational Interviewing Treatment Integrity (3.0; MITI), which acts as an integrity measure for motivational interventions incorporating MI.²⁹ As well, the lack of follow-up assessments in some studies made it difficult to ascertain whether ED patients can maintain changes over time. Homogeneity in studies needs to be increased so a meta-analytical analysis can be conducted; this can be overcome by replicating existing studies.

This scoping review primarily examined the efficacy of MI and adapted MI at improving

ED patients' readiness to change, with a secondary purpose of determining whether MI or adapted MI decreased eating pathology. This review has shown that there is evidence for the use of MI and adapted MI in ED interventions in terms of increasing patients' readiness to change in 70% of studies, however, no definitive evidence was found on whether motivational interventions are more efficacious than other interventions. In addition, motivational interventions may be as efficacious as other interventions (i.e. CBT^{11,27}) in reducing eating pathology for AN and BN, with BED being the exception.

Due to the fact that ED patients are highly ambivalent to change, and that MI and adapted MI increases readiness to change, there is a need for more research to confidently determine whether MI and adapted MI interventions should be used over other interventions in clinical settings.

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Appendix A

Table 1. Summary of Motivational Interviewing and Adapted Motivational Interviewing Strategies in Eating Disorder Programs

Study	Sample Size	Type of Eating Disorder ^a	Study Design	Treatment Description ^b	Assessment Times	Outcome Measures ^c	Outcomes
Allen et al., 2011	95	AN, BN	Sequential trial, repeated measures analysis of variance	Treatment: 4 weekly MFT sessions before an enhanced CBT programme (length not specified) Comparison: enhanced CBT programme	Pre, post	EDE—Q, Readiness and Motivation Interview	<ul style="list-style-type: none"> Significant decrease ($p < 0.05$) in pre-contemplation ratings and significant increase ($p < 0.05$) in restriction action ratings for treatment group Significant decrease in eating pathology for both groups post-treatment ($p = 0.002$)
Cassin et al., 2008	108	BED	Randomized control trial, repeated measures split-plot analysis of variance	Treatment: self-help handbook (called Defeating Binge Eating; 21 pages of psychoeducation and cognitive-behavioral techniques) + one individual AMI session (personalized assessment feedback as well as manualized forms of MI; mean length 81.8 minutes) Control: self-help handbook (same as treatment)	Baseline, post, 4, 8, and 16 weeks follow-up	BDI—II, RSE, ESWLS, WEL, change rating scale, TLFB, (binge frequency and size for period of last contact)	<ul style="list-style-type: none"> Significantly more participants in treatment group increased confidence to change versus control group ($p < 0.001$, $d = 0.96$) Significantly more participants in treatment group reduced their binge-eating frequency versus control group at 4 week ($p < 0.001$, $d = 0.076$), 8 week ($p = 0.005$, $d = 0.56$), and at 16 week ($p < 0.001$, $d = 0.80$) Significantly more participants abstained from binge eating (zero eating binges within a 2 month period) in treatment versus control group ($p = 0.03$) Significantly more ($p = 0.001$) participants no longer meeting the BED criterion in treatment versus control group

Study	Sample Size	Type of Eating Disorder ^a	Study Design	Treatment Description ^b	Assessment Times	Outcome Measures ^c	Outcomes
Dean et al., 2008	42	AN, BN, BED	Sequential control trial, repeated measures analysis of variance	Treatment: 4 weekly MET group sessions + treatment as usual Control: Treatment as usual	Pre, post, 6 weeks follow-up	ANSOCQ (modified), DB, SES (modified), TEQ, EDI—2, EDE—Q, BDI—II (modified), BMI	<ul style="list-style-type: none"> • Non-significant increase in motivation in both groups from pre- to post-treatment • Non-significant increase in treatment group and non-significant decrease in control group in motivation from post-treatment to follow-up • Significantly greater decrease in eating pathology (drive for thinness, and functional avoidance; $p = 0.041$, $p = 0.022$ respectively) in control versus treatment group at post-treatment
Dunn et al., 2006	90	BN, BED	Randomized control trial, repeated measures analysis of variance	Treatment: 1 initial individual MET session (MI with personal feedback of assessment; approximately 85 minutes each) + a self-help manual (called Overcoming Binge Eating; outlines six steps to change) Control: self-help manual (same as treatment)	Pre, post, 2 and 4 months follow-up	EDDS, EDE—Q, URICA (modified), satisfaction survey, compliance with self-help handbook measure	<ul style="list-style-type: none"> • Significant increase ($p < 0.5$) in contemplation and action scores in treatment group from baseline to post treatment for binge readiness to change subscale ($d = 1.01$) • Significant decrease in (precontemplation scores ($p < 0.1$) and significant increase in contemplation scores ($p = 0.01$) from pre intervention to post intervention in treatment group for compensatory behavior readiness to change ($d = 1.50$) • Significantly more treatment participants reduced eating pathology (binge eating) at 4-month follow-up ($p < 0.05$)

Study	Sample Size	Type of Eating Disorder ^a	Study Design	Treatment Description ^b	Assessment Times	Outcome Measures ^c	Outcomes
Geller et al., 2011	113	AN, BN, EDNOS	Randomized control trial, analysis of variance	<p>Treatment: 5 weekly sessions of individual RMT (five session preparatory treatment targeting restriction precontemplation (the extent participants want to restrict their dietary intake and lose/maintain low weight; 60 minutes each) + treatment as usual</p> <p>Control: wait listed + treatment as usual</p>	Baseline, 6 week and 3 months follow-up	EDI—2, BSI, RSES	<ul style="list-style-type: none"> • Significant decrease in restriction pre-contemplation at 6 week ($p \leq 0.01$) and 3 month ($p < 0.01$) follow-up in both groups, and significant increase ($p < 0.001$) in restriction action at 6 week and 3 month follow-up in both groups • Significantly more control participants highly ambivalent to change ($\geq 67\%$) versus treatment participants at both 6 week and 3 month follow-up – 37% versus 61%, 19% versus 45%, respectively) • Significant decrease in eating pathology at 6 week ($p < 0.05$) and 3 month ($p < 0.01$) follow-up in both groups
Hötzel et al., 2014	212	AN, BN	Randomized control trial, repeated measures analysis of variance	<p>Treatment: 6 weekly MET sessions (45 minutes each)</p> <p>Control: wait-listed</p>	Pre, post	SOCQ—ED, P—CED, SES, RSES, EDE—Q	<ul style="list-style-type: none"> • Significant increase ($p = 0.001$) in motivation to change in treatment group but not in control group only in 3 SOCQ-ED items: motivation to change the fear of becoming fat, $d = 0.37$; motivation to reduce food and weight preoccupations, $d = 0.21$; and motivation to gain weight problematic areas, $d=0.21$. • Significant decrease in restrained eating ($p < 0.001$) and increase ($p = 0.001$) in endorsement of the burdens of an ED in treatment group but not in control group

Study	Sample Size	Type of Eating Disorder ^a	Study Design	Treatment Description ^b	Assessment Times	Outcome Measures ^c	Outcomes
Treasure et al., 1999	125	BN	Randomized control trial, repeated measures analysis of variance	Treatment: 4 weekly individual MET followed by 8 weekly individual or group CBT (length not specified) Comparison: 4 weekly individual CBT followed by 8 weekly group CBT (length not specified)	Baseline, post	URICA (modified), WAI, frequency of episodes of binge eating, vomiting, and laxative abuse scale	<ul style="list-style-type: none"> Significant increase ($p < 0.05$) in motivation (increase of participants in action phase) in both groups More comparison group participants moved to the action phase Significant decrease in binge eating ($p < 0.001$), vomiting ($p < 0.001$), laxative abuse ($p < 0.05$) in both groups
Vella-Zarb et al., 2014	45	BN, BED	Randomized control trial, repeated measures analysis of variance	Treatment: MI (60 minutes) followed by a self help manual (called Overcoming Binge Eating) Comparison: Psychoeducation (60 minutes) followed by a self help manual (same as treatment)	Baseline, 1 and 4 months follow-up	EDE-Q, URICA, WEL	<ul style="list-style-type: none"> Significant increase in readiness to change ($p < 0.001$, $d = 0.75$) from pre- to post-treatment in treatment but not in control group Significant decrease ($p < 0.001$) in eating pathology at 1 month and 4 month follow-up in both groups
Wade et al., 2009	47	AN	Randomized control trial, linear regression and mixed model analyses	Treatment: 4 sessions of MI (60 minutes) over a 2 week initial admission period + treatment as usual Control: treatment as usual	Baseline, 2 and 6 weeks follow-up	EDE, ANSOCQ, 6 self-report questions to assess motivation and self-efficacy	<ul style="list-style-type: none"> Non-significant increase at 2 week follow-up and significant decrease at 6 week follow-up in motivation in treatment group (motivation remained above baseline) Non-significant increase at 2 week follow-up and significant decrease at 6 week follow-up in motivation in control group (motivation fell below baseline) Non-significant decrease in eating pathology in both groups

Study	Sample Size	Type of Eating Disorder ^a	Study Design	Treatment Description ^b	Assessment Times	Outcome Measures ^c	Outcomes
Weiss et al., 2013	32	AN, BN, EDNOS	Randomized control trial, repeated measures analysis of variance	Treatment: 4 weekly individual sessions of MI (50 minutes) followed by treatment as usual Control: treatment as usual	Pre, post	P—CED, MTC (modified)	• No significant changes in readiness to change in both groups

^aType of eating disorder: AN = Anorexia Nervosa, BED = Binge-Eating Disorder, BN = bulimia nervosa, EDNOS = eating disorder not otherwise specified

^bTreatment description abbreviations: AMI = adapted motivational interviewing, CBT = cognitive behavioral therapy, MET = motivational enhancement therapy, MFT = motivation focused treatment, MI = motivational interviewing, RMT = readiness and motivation therapy

^cOutcome measures abbreviations: ASNOCQ = Anorexia Nervosa stages of change questionnaire, BDI—II = Beck Depression Inventory—II, BMI = body mass index, BSI = Brief Symptom Inventory, DB = Decisional balance scale for anorexia, EDDS = Eating Disorder Diagnostic Scale, EDE = Eating disorders examination, EDE—Q = Eating Disorder Examination—Questionnaire, EDI—2 = Eating disorder inventory 2, ESWLS = Extended Satisfaction With Life Scale, MTC = Motivation to change scale, P—CED = Pros and Cons of Eating Disorders Scale, RSES = Rosenberg Self-Esteem Scale, SES = Self efficacy scale for anorexia nervosa, SOCQ—ED = Stages of Change Questionnaire for Eating Disorders, TEQ = Treatment engagement questionnaire, TFLB = Timeline Follow-Back interview, URICA = University of Rhode Island Change Assessment Scale, WAI = Working Alliance Inventory, WEL = Weight Efficacy Lifestyle Questionnaire