

An Evaluation of Training in Motivational Interviewing for Nurses in Child Health Services

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Background: Acquiring proficiency in motivational interviewing (MI) may be more difficult than generally believed, and training research suggests that the standard one-time workshop format may be insufficient. Although nurses represent one of the professions that have received most training in MI, training in this group has rarely been systematically evaluated using objective behavioral measures. **Aims:** To evaluate an enhanced MI training program, comprising a 3.5-day workshop, systematic feedback on MI performance, and four sessions of supervision on practice samples. **Methods:** Nurses ($n = 36$) in Swedish child health services were trained in MI. Skillfulness in MI was assessed using the Motivational Interviewing Treatment Integrity (MITI) Code. Effects of training were compared to beginning proficiency thresholds. **Results:** Participants did not reach beginning proficiency thresholds on any of the indicators of proficiency and effect sizes were small. **Conclusions:** The present study adds to a growing body of literature suggesting that the current standard MI training format may not provide practitioners with enough skillfulness. Moreover, the results indicate that even enhanced training, including systematic feedback and supervision, may not be sufficient. Suggestions for improved MI training are made.

Keywords: Motivational interviewing, training evaluation, nurses, child health services.

Introduction

Motivational interviewing (MI) is a brief psychological treatment characterized by an emphasis on eliciting motivation for behavior change by assisting clients in exploring and resolving ambivalence about change (Miller and Rollnick, 2002). MI practice rests on four general principles, summarized as: (a) expressing empathy for the client by accepting the client's situation and recognizing that ambivalence is normal, by means of reflective listening; (b) developing discrepancy between present behavior and personal goals or values, and thereby encouraging the client to present reasons for change; (c) rolling with resistance to counteract presentation of reasons not to change; and (d) supporting self-efficacy of the possibility of change and emphasizing client responsibility for choosing and carrying out change (Miller and Rollnick, 2002).

MI was originally developed to deal with alcohol and substance abuse disorders (Miller and Rollnick, 1991), and over the years its application has been extended to a range of different

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problem areas, including tobacco, HIV/AIDS, and health-related behaviors, such as diet and physical activity (Rollnick, Miller and Butler, 2008). MI has a solid research base to support its efficacy and is consistently proved to be more effective than no-treatment or placebo control conditions, and as effective as other active treatments, such as cognitive-behavioral therapy (CBT) or 12-step treatment (Hettema, Steele and Miller, 2005; Lundahl, Kunz, Brownell, Tollefson and Burke, 2010).

Presumably due to the firm evidence base and the briefness of its application, there is increasing demand for training in MI and dissemination of the method to professionals in various fields. However, although MI as a clinical method is evidence-based, training in MI is not. This situation is not unique to MI; rather, it is shared with most other psychological treatments, such as CBT (Rakovshik and McManus, 2010). At present it is not clear what methods of learning and which training components are required for optimal acquisition of proficiency in MI, and the same is true of the appropriate sequencing of training components, and the adequate length of training (Madson, Loignon and Lane, 2009).

The most common training format is the one-time workshop, consisting of a combination of didactic presentation and demonstration and experiential skill practice (e.g. role-play). In a systematic review of 27 training studies, of which 8 included training samples of nurses, 50% of the studies used workshop only, and the length of training typically ranged from 9 to 16 hours (Madson et al., 2009). Only six studies discussed some form of trainee feedback on experiential exercises from instructor or peer, or some form of supervision, in addition to workshop training, and just one study described ongoing supervision. In a review of 10 studies of MI training for general health care practitioners, of which 6 included training samples of nurses, the median length of training was approximately 9 hours (Soderlund, Madson, Rubak and Nilsen, 2011).

After workshop training, participants commonly self-report increased knowledge about MI, positive attitudes towards and confidence in using MI, and increased MI skillfulness (Madson et al., 2009; Miller and Mount, 2001; Miller, Yahne, Moyers, Martinez and Pirritano, 2004; Soderlund et al., 2011). However, when objective behavioral measures of MI proficiency are used, such as the Motivational Interviewing Skill Code (MISC) (Miller, Moyers, Ernst and Amrhein, 2003), or the Motivational Interviewing Treatment Integrity (MITI) Code (Moyers, Martin, Manuel, Miller and Ernst, 2007), attending a single training workshop does not appear sufficient for the long-term adoption of skills (Walters, Matson, Baer and Ziedonis, 2005). In Madson et al. (2009), most studies used self-report measures to evaluate training outcomes; only 10 of 27 studies reported assessing MI skills (usually at post-training) according to the MISC or the MITI, and in Soderlund et al. (2011) just one study evaluated proficiency using the MISC or the MITI.

Training outcome research clearly indicates that a single workshop is insufficient in providing practitioners with proficiency, and suggests that systematic feedback on MI performance using objective behavioral measures (e.g. the MITI, the MISC) and supervision may be required for the acquisition and maintenance of skills. In a study by Miller and Mount (2001), a 2-day workshop did not alter practitioner behavior enough, as assessed by the MISC, to produce changes in client in-session behavior, which is prognostic of client outcome (Amrhein, Miller, Yahne, Palmer and Fulcher, 2003). Baer et al. (2004) evaluated a 2-day workshop, judging 8 of 19 participants as proficient at 2-month follow-up. Only one of five MISC summary scores, and only one of six MISC global rating scores, remained higher than baseline at follow-up. In a randomized trial of different methods of learning MI (Miller

et al., 2004), clinicians receiving workshop only did not maintain gains at 4-month follow-up as assessed by the MISC, while those receiving feedback and/or supervision did. Only the group receiving the full training package (i.e. workshop, feedback, and supervision) produced changes in client in-session behavior. The trial was replicated by Moyers et al. (2008). They found that although post-training gains as assessed by the MITI had decreased at 4-month follow-up, scores on six of seven measures of proficiency at follow-up were higher than pre-training scores. However, the authors noted that the gains were not as large as those found in other training samples more skilled prior to training, and did not attain the level required for clinical trials. Another finding was that training enrichments (i.e. feedback and supervision by telephone) did not have an additive effect on skillfulness, contrary to what other studies have found (Miller et al., 2004; Walters et al., 2005).

The purpose of the present study was to evaluate training in MI for nurses in child health services. The training program comprised a 3.5-day workshop, one occasion of systematic feedback on MI performance based on the MITI, and four individual supervision sessions on practice samples. In addition, to offer opportunities for repetition and enhanced learning, nurses had unlimited access to a website containing video recordings of workshop lectures, lecture materials, video illustrations of role-plays of MI principles and strategies, and a manual with an overview of the MI approach. Nurses' proficiency in MI after workshop training, feedback, and supervision was assessed according to the MITI, and compared to proficiency thresholds as proposed by Moyers et al. (2007). It was expected that nurses would acquire skillfulness at a "beginning proficiency" level. Based on the hypothesis that extensive work experience using traditional methods of communicating with clients render it more difficult to acquire competence in MI (Miller and Mount, 2001; Schoener, Madeja, Henderson, Ondersma and Janisse, 2006; Soderlund, Nilsen and Kristensson, 2008), it was expected that number of years in child health services would moderate the effects of the training program.

Method

Research context: the PRIMROSE trial

The present study was part of a population-based, randomized primary preventive intervention trial of childhood obesity called PRIMROSE, currently in progress within child health services in eight regions in the mid and northern parts of Sweden. The PRIMROSE trial concerns families with small children and focuses on promoting healthy dietary and physical activity behaviors in children. Nurses trained in MI perform the intervention based on a manual with nine structured sessions. Intervention starts when children are 9 months old and ends at 4 years of age. In the early sessions, intervention focuses partly on parental health behaviors to establish parents as role models for their children. As the children get older, focus is shifted to child health behaviors. One principle underlying the intervention is that child health behaviors to a large extent are under the control and influence of parents, especially at younger ages. Accordingly, parents are the main targets of intervention and the agents through which it is expected to have its effects on the prevalence of childhood obesity in the study population. Families in the control group participate in the regular child health surveillance program and meet with nurses who were not trained in MI as part of the PRIMROSE trial and have no access to any training materials or the intervention manual.

Participants

In the PRIMROSE trial, nurses agreeing to participate were cluster randomized at the level of the child health center at which they were employed to an intervention group or a control group. Participants in the present study were nurses ($n = 36$) in the PRIMROSE trial intervention group who had, by the time of the preparation of the present paper, submitted the first training session recording and the first manual-based trial session recording (for description, see below), for coding according to the MITI. All participants were females, mean age at the time of the training in MI was 48 ($SD = 9$, range = 31–62) years, all had specialist training (equivalent to one-year full-time studies) in child and adolescent health nursing or district nursing, and an average of 12 ($SD = 8$, range = 0–30) years of work experience in child health services. Twenty-three (64%) nurses had prior training in MI of some kind; five of these had received training extending 20 hours. Participating nurses did not differ from a sample of nurses in the regions of Sweden taking part in the PRIMROSE trial on type of specialist training, $\chi^2(1) = 1.029$, $n_1 = 36$, $n_2 = 696$, $p = .31$, years of experience in child health services, $U = 11611.500$, $n_1 = 36$, $n_2 = 664$, $p = .77$, or prior MI training $\chi^2(1) = 0.857$, $n_1 = 36$, $n_2 = 687$, $p = .36$. Nurses in the control group were invited to record one session at a time corresponding to the first training session in the intervention group, and were also planned to record a second session. However, due to difficulties of reliable coding of sessions in routine practice in terms of insufficient length of recordings and the frequent occurrence of session behaviors not appropriate for coding (e.g. examinations of hearing and vision, immunizations), control group data were not included in the analyses. The present study, as well as the PRIMROSE trial, was approved by the regional ethical review board in Stockholm, Sweden.

MI training

The training program in MI addressed learning stages 1 to 5 (Miller and Moyers, 2007), comprising the spirit of MI, client-centered counseling skills, recognizing and reinforcing change talk, eliciting and strengthening change talk, and rolling with resistance, according to decision rules suggested by Madson et al. (2009). The training consisted of workshop, feedback on MI performance as assessed by the MITI, and four individual supervision sessions by telephone.

Workshop. The workshop comprised 3.5 days, with 8 hours of training per day, and was given in two parts (1.5 days + 2 days, with a mean of 17 days apart). A 1-day introductory lecture on nutrition, physical activity, learning theory, and CBT principles preceded the workshop. To train all nurses in the intervention group, seven workshops were conducted between 2008 and 2010; these were attended by 10 participants on average. The workshop was led by the second author, who is a licensed clinical psychologist and member of the Motivational Interviewing Network of Trainers (MINT) with extensive experience in conducting MI training workshops. The workshop followed training recommendations by the MINT and included didactic presentations and experiential exercises, with exercises approximating 60% of total workshop time.

Didactic presentations. The following topics were covered at various length: definition of MI; the evidence base; limitations of traditional advice-giving; the transactional model; MI principles (including MI spirit, expressing empathy, developing discrepancy, rolling with

resistance, and supporting self-efficacy); MI strategies (including asking open questions, affirming, reflecting, and summarizing, MI adherent and MI non-adherent behaviors, agenda setting, importance/confidence ruler, decisional balance, eliciting and reinforcing change talk, reducing resistance, and developing a change plan); phase 1 and 2 of MI practice; learning MI; measurement of proficiency (the MITI); predictors of client outcome; and theoretical considerations. In addition to didactic presentations, the workshop included role-play demonstrations of principles and strategies by instructors, viewing of the Professional Learning Series video demonstrations (Miller, Rollnick and Moyers, 1998), and hand-outs.

Experiential exercises. During the workshop, didactic presentations were intertwined with modeling demonstrations, experiential exercises, and behavioral role-plays of MI principles and strategies. Some exercises were based on scenarios with pre-specified dialogue, others were improvised by participants. Principles and strategies were first practiced on in a piecemeal fashion, thereafter integrated in role-plays based on session content as specified in the PRIMROSE intervention manual. Role-plays were conducted in pairs, on occasion with a third participant as observer. Feedback on role-play performance, and modeling of MI consistent behaviors, were given by instructors. Instructors were the first and second authors, and a third licensed clinical psychologist. On the last day, the participants' supervisors joined the workshop and served as instructors as well.

Supervision. As soon as the nurses had finished the workshop, they were encouraged to start practicing MI with clients in their routine practice at child health centers. Four of these sessions were considered to be part of training. These training sessions were self-selected and conducted with different families with children between the ages of 9 and 18 months. The sessions were recorded on Mp3 players. The recordings formed the basis for individual supervision sessions conducted by telephone, instructed to take place after each training session, with an interval of 2–3, 5, 8, and 11 weeks after the workshop had ended. Session recordings were uploaded on the project website by nurses and then streamed by supervisors, who listened to up to 20 minutes of each session (i.e. the coded segment, see below). The first training session was coded according to the MITI. Results of the coding (i.e. feedback on MI performance) were sent to both nurses and supervisors before supervision. Hence, the first supervision session was based on both the session recording and the results of the coding, whereas supervision of the following three training sessions was based on session recordings only. Each of the four supervision sessions was instructed to last for 30 minutes. Supervision was conducted by 10 MINT members with various clinical backgrounds, including 5 licensed clinical psychologists, with 4 years of experience as MI supervisors on average.

Manual and website. The PRIMROSE intervention manual contains session-by-session information and instructions on healthy dietary and physical activity habits, and behavior change. The conceptualization of behavior change was informed by MI, learning theory, and the principles of CBT. In addition, the manual presented a brief overview of the MI approach. Manual content was designed to be delivered to study participants in a style consistent with the principles and strategies of MI. The manual was administered to nurses on the last day of part one of the workshop to avoid any distraction from workshop training. Nurses were encouraged to read through the manual, and prepare questions about the manual as needed, to the second part of the workshop. Besides discussion of any questions about content, the manual was not used as part of training. A website was constructed to make possible enhancement of learning through clarification and repetition. It contained the manual, video recordings of workshop lectures, lecture materials, and 24 video illustrations of role-plays of

MI principles and strategies (e.g. evocation, rolling with resistance, complex reflections) and session components (e.g. agenda-setting and feedback on monitoring of dietary and physical activity behaviors). Website role-plays involved professional actors playing parents, an MI-trained nurse, and licensed clinical psychologists playing nurses or parents.

Assessment

Recording of sessions. To evaluate nurses' proficiency in MI after workshop and supervision, the first training session and the first manual-based PRIMROSE trial session were recorded and coded according to the MITI. The training session was instructed to take place 2 to 3 weeks after the workshop had finished and was self-selected as to which family to be recorded. The trial session was to be conducted 4.25 months after the training session and was randomly selected as to which family to be recorded. Informed consent about recording was collected from participating parents.

Coding. Nurses indicated at what time point in the training and trial session recordings they started focusing on diet and physical activity habits; from that point sessions were coded for 20 minutes. Raters were two persons proficient in MITI coding, as determined by match to pre-scored gold standard transcripts and inter-rater reliability. Coders were trained in coding according to standards set by Moyers et al. (2007); that is, they had received 40 hours of training and participate every 2 weeks in group coding sessions to maintain high inter-rater reliability. Coders were judged as equally skilled in MITI coding and had practiced coding for 4 and 5 years, respectively. Both raters coded all recordings. Training in MITI coding and the coding of session recordings were performed at the Motivational Interviewing Coding (MIC) Lab at the Department of Clinical Neuroscience at Karolinska Institutet, Stockholm, Sweden. The MIC Lab is headed by the second author. As part of routine coding practice, 10% of all session recordings sent to the lab are regularly double-coded to check inter-rater reliability.

Measure. The Motivational Interviewing Treatment Integrity (MITI) Code is a behavioral coding system with two intended fields of application: (a) as a treatment integrity measure for clinical trials, and (b) as a feedback tool to improve skill in clinical practice or training (Moyers et al., 2007). The MITI consists of two components related to measurement of proficiency: global scores and behavior counts. Global scores reflect the rater's overall judgment of practitioner performance on five dimensions: evocation, collaboration, autonomy/support, direction, and empathy, with the first three dimensions constituting MI spirit. Ratings are made after review of a session segment on a 5-point Likert-type scale, from 1 (low) to 5 (high). Behavior counts require the rater to add up instances of particular practitioner behavior according to pre-specified categories and decision rules. Frequencies are counted for the following categories: information giving, closed and open questions, simple and complex reflections, MI adherent behaviors (MiA; e.g. asking permission before giving advice, affirming the client), and MI non-adherent behaviors (MiNa; e.g. confronting or directing the client). Counts are made as the review of a session segment is running until the end. For adequate coding the MITI requires a minimum segment length of 20 minutes, as well as a designated target behavior for the intervention. Target behaviors in the PRIMROSE trial are dietary and physical activity habits. The Swedish version of the MITI 3.0 (Forsberg, Forsberg and van Loo, 2008) was employed, with inter-rater reliability assessed to between .86 and 1.00 for global scores (Forsberg, Berman, Kallmen, Hermansson and Helgason, 2008), using the intra-class correlation coefficient (ICC). According to a classification system

proposed by Cicchetti (1994), the clinical significance of an ICC below .40 is poor, ICC between .40 and .59 is fair, ICC between .60 and .74 is good, and ICC between .75 and 1.00 is excellent. Sensitivity of the MITI in detecting changes in clinician behavior due to training has been assessed in pre- to post-training samples, with higher scores in empathy and MI spirit, more complex reflections and total reflections, and a higher reflection-to-question ratio, after training than at baseline (Moyers, Martin, Manuel, Hendrickson and Miller, 2005).

Indicators of proficiency. Several variables of the MITI were used as indicators of proficiency in MI. The MITI provides summary scores based on global scores and behavior counts to aid in evaluating skillfulness against beginning proficiency and competency thresholds. These summary scores are: MI spirit (evocation + collaboration + autonomy/support/3), percent complex reflections (complex reflections/simple reflections + complex reflections), percent open questions (open questions/open questions + closed questions), reflection-to-question ratio (simple reflections + complex reflections scores/open questions + closed questions), and percent MiA (MiA/MiA + MiNa). In addition to the summary scores, empathy, MiA, and MiNa, were used as indicators of proficiency. Although regularly employed, it should be noted that the proficiency thresholds for summary scores and empathy are based on expert opinion and at present there exists no validity data to support them (Moyers et al., 2007).

Data analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS), version 17.0. Inter-rater reliability of the MITI coding was estimated by calculating ICCs, employing the two-way mixed model with absolute agreement, and interpreting single measures in the SPSS output. Some of the training and trial session recordings did not cover 20 minutes, thus to render comparison possible, behavior counts on MiA and MiNa were rescaled to counts per 20 minutes. Dependent *t*-tests were conducted to evaluate the effects of supervision by comparing scores on indicators of proficiency of the first training session (i.e. after workshop) and the first PRIMROSE trial session, at which time the nurses had received four sessions of individual supervision. Cohen's *d* was used to evaluate the magnitude of effect. To investigate potential variables moderating differences in performance on the MITI among nurses, multiple linear regression analyses were conducted. Dependent variables were differences in scores on MITI indicators of proficiency between the trial session and the training session (i.e. difference = trial session score - training session score). Independent variables were work experience in child health services, and time elapsed between end of workshop and recording of the training session (T1), between recording of the training session and supervision of that session (T2), and between supervision of the training session and recording of the trial session (T3). In the regression models, the time variables (T1, T2, and T3) were included to adjust for digressions from instructions on the timing of training, supervision, and trial sessions. To ease interpretation, dependent variables were standardized to z-scores ($M = 0, SD = 1$). Regression analyses were also performed to investigate whether compliance to instructions on the timing of sessions influenced the effects of training. Dependent variables were differences in scores on MITI indicators of proficiency, and independent variables were the time variables, with one model separately for each time variable. Regression analyses of time variables were performed both with outliers ($n = 2$) and without. Outliers were identified using Cook's distance > 1 (Tabachnick and Fidell, 2007).

Table 1. Inter-rater reliability as estimated by the intra-class correlation coefficient for indicators of proficiency in Motivational Interviewing

MITI indicator of proficiency	ICC (95% CI)
MI spirit	.63 (.30, .83)
Empathy	.55 (.20, .78)
Percent complex reflections	.35 (−.06, .66)
Percent open questions	.84 (.66, .93)
Reflection-to-question ratio	.85 (.67, .93)
Percent MI adherent behaviors	.62 (.28, .82)
MI adherent behaviors	.78 (.53, .90)
MI non-adherent behaviors	.47 (.08, .74)

Note. MITI = Motivational Interviewing Treatment Integrity Code, ICC = intra-class correlation coefficient.

Results

Inter-rater reliability

Inter-rater reliability of the MITI coding was based on the first 23 recordings of the first PRIMROSE trial session. ICCs across global scores and behavior counts ranged from .35 to .85. Of the eight ICCs, one qualified as poor (percent complex reflections: .35), two as fair (empathy and MI non-adherent behaviors: .55 and .47, respectively), while remaining five (63%) ICCs were in the good or excellent range. The ICCs for indicators of MI proficiency are shown in Table 1.

Timing of training, supervision, and trial sessions

It proved difficult for nurses or supervisors to follow instructions on when to conduct training and trial sessions, as well as with what interval to perform supervision: session recordings and supervision were delayed, and time varied extensively between nurses. Mean time for T1 was 1.9 ($SD = 2.1$, range = 0–10) months, and mean time for T2 was 1.6 ($SD = 2.2$, range = 0–13) months, instead of the prescribed *total* time period of 2–3 *weeks* for T1 and T2. Mean time for T3 was 8.2 ($SD = 3.5$, range = 4–20) months, instead of the prescribed time period of 4.3 months. Likewise, nurses failed to follow instructions on lengths of recorded session segments: 21 (58%) training session recordings, and five (14%) trial session recordings were shorter than 20 minutes. Mean length of the training session recording was 17.1 ($SD = 3.0$, range = 10–20) minutes; however, mean length improved and at the trial session recording, it was 19.3 ($SD = 2.3$, range = 10–20) minutes.

Proficiency in MI

A 3.5-day workshop was insufficient in providing nurses with skillfulness in MI practice. Participants did not reach beginning proficiency thresholds on any of the indicators of proficiency. The four sessions of supervision that followed the workshop training did not increase proficiency levels. On the contrary, on five of the seven indicators on which levels

were expected to increase, the already low levels decreased (although non-significantly). Mean differences on indicators between the first training session (i.e. after workshop) and the first trial session (i.e. after four supervision sessions) were small, ranging from -0.04 to -0.79 , across indicators. Dependent t -tests showed differences to be non-significant, with t -values ranging from $t(35)$ 0.487 to -2.011 , and p -values ranging from $.05$ to $.63$. The largest effect sizes were in the small range (all d s $< .50$). The proportion of participants reaching beginning proficiency thresholds after four sessions of supervision was increased on three indicators, and decreased on three indicators. For information on MI proficiency on various indicators after workshop training and supervision sessions see Table 2.

Number of years of work experience in child health services as a potential moderator of differences in performance on the MITI among nurses was investigated using multiple regression modeling, with adjustments made for variations in the timing of training, supervision, and trial sessions. In the unadjusted model, unstandardized regression coefficients expressed as difference in the dependent variables in measured units (i.e. MITI scores) (β s) ranged from $.00$ to $.04$, and unstandardized regression coefficients expressed as difference in the dependent variables in units of SD (i.e. z -scores) (β_{z} s) ranged from $.00$ to $.06$, with p -values ranging from $.01$ to $.96$, across indicators of proficiency (see Supplementary material). In the adjusted model, taking the time variables into account, the regression coefficients were not improved, with identical ranges for β s and β_{z} s from $.01$ to $.06$, with p -values ranging from $.01$ to $.70$. Thus, work experience did not moderate the effects of training on proficiency in MI.

Regression analyses were also conducted to investigate whether compliance to instructions regarding the timing of training, supervision, and trial sessions influenced the effects of training. Although regression coefficients were small and mostly non-significant, the results suggest that the association between time digression and outcome was strongest for T1 (see Supplementary material).

Discussion

None of the hypotheses were supported in the present study. The training program, comprising a 3.5-day workshop, one occasion of systematic feedback on MI performance based on the MITI, and four sessions of supervision on practice samples, did not provide participating nurses with beginning proficiency in MI; the effects of training were negligible and non-significant. Work experience, expected to moderate training effects, did not influence the acquisition of skills. In addition, variability among nurses in the timing of training, supervision, and trial sessions did not seem to affect the level of acquired skills, although this finding should be interpreted with caution due to low power in the analyses.

The results of the present study are inconsistent with other studies evaluating similar training packages, reporting training samples reaching novice/beginning proficiency threshold levels on all (Miller et al., 2004; Moyers et al., 2008) or some (Baer et al., 2009; Mounsey, Bovbjerg, White and Gazewood, 2006; Smith et al., 2007) indicators of skillfulness at post-training assessment. Note, however, that none of the latter studies reported on practitioners reaching beginning proficiency on percent MI adherent behaviors, which involves the one indicator related to clinician performance that consistently has been shown to mediate change in MI; that is, MI non-adherent behaviors (Apodaca and Longabaugh, 2009). However, the results of the present study are consistent with studies indicating that even

Table 2. Proficiency in Motivational Interviewing in nurses ($n = 36$) in child health services after 3.5-days of workshop training and four sessions of supervision as compared to beginning proficiency thresholds

MITI indicator of proficiency	Beginning proficiency thresholds ^a	Mean (<i>SD</i>) after workshop	Mean (<i>SD</i>) after supervision	Mean difference (<i>SD</i>)	<i>t</i> (<i>p</i>)	Cohen's <i>d</i> effect size	<i>n</i> (%)	<i>n</i> (%)
							participants proficient after workshop	participants proficient after supervision
MI spirit	3.5	2.83 (0.82)	2.76 (0.63)	-0.07 (.91)	0.487 (.63)	.10	7 (19.4)	3 (8.3)
Empathy	3.5	2.83 (0.81)	2.75 (0.60)	-0.08 (.91)	0.552 (.59)	.11	8 (22.2)	3 (8.3)
Percent complex reflections	.40	0.16 (0.20)	0.13 (0.13)	-0.04 (.21)	1.013 (.32)	.18	7 (19.4)	0 (0.0)
Percent open questions	.50	0.33 (0.17)	0.41 (0.18)	0.08 (.24)	-2.011 (.05)	.46	7 (19.4)	14 (38.9)
Reflection-to-question ratio	1	0.61 (0.38)	0.79 (0.57)	0.18 (.63)	-1.717 (.10)	.37	6 (16.7)	8 (22.2)
Percent MI adherent behaviors	.90	0.73 (0.36)	0.69 (0.41)	-0.04 (.48)	0.532 (.60)	.10	19 (52.8)	20 (55.6)
MI adherent behaviors		3.14 (2.32) ^b	2.35 (1.80) ^b	-0.79 (2.43)	1.957 (.06)	.38		
MI non-adherent behaviors		0.84 (1.31) ^b	0.48 (0.87) ^b	-0.36 (1.20)	1.807 (.08)	.32		

Note. MITI = Motivational Interviewing Treatment Integrity Code.

^a According to Moyers, Martin, Manuel, Miller and Ernst (2007).

^b Number of behavior counts per 20 minutes of coding.

comprehensive training packages may be insufficient in providing training samples with beginning proficiency (Forsberg, Ernst and Farbring, 2010; Forsberg, Forsberg, Lindqvist and Helgason, 2010; Schoener et al., 2006), although the post-training levels on indicators of skillfulness in the present study, with few exceptions, are lower than those reported in these studies.

The findings are puzzling and present difficulties in explaining the consistent lack of training effects. One explanation might pertain to the character of the intervention the nurses were trained to conduct. Since the PRIMROSE trial is a primary preventive intervention of childhood obesity, the study population consists of families with small children, independent of BMI status of parents and children or the nature of their dietary and physical activity behaviors. This might suggest that some families already have established healthy habits, and, thus, neither present any problem behaviors, nor ambivalence about changing behaviors. For these families, the task is not to prepare them to change behaviors, but to motivate them to maintain behaviors, across situations and time. Since MI primarily is designed to elicit and strengthen motivation for change of problem behaviors, the nature of the PRIMROSE intervention might have created greater difficulties for nurses in the present study to achieve high levels on indicators of proficiency, compared to training samples in studies employing clients with problem behaviors. This possibility is supported by the MITI raters, who in a subsample of the sessions got the impression that nurses did not know how to deal with families already following recommendations on healthy eating and physical activity. Thus, a challenge in using MI to prevent childhood obesity, compared to treat alcohol or substance abuse or any other problem behavior, is to simultaneously elicit motivation for changing some behaviors (i.e. unhealthy habits), maintaining other behaviors (i.e. healthy habits), and to keep parents alert and motivated to identify and manage potential upcoming problem behaviors or difficulties not presently encountered (e.g. negative peer influence or a growing need for independence). In addition, the somewhat incompatible approach of simultaneously adhering to the spirit and principles of MI and the obligation to provide parents with mandatory information according to the standards of child health services has probably impacted on MI proficiency levels in the nurses.

Another possible explanation for the lack of training effects, presuming that training in order to provide opportunities for learning has to be conducted during a coherent period, is that the large digressions in the timing of training, supervision, and trial sessions may have influenced the acquisition of skills negatively. One reason for the digressions in time might be due to an observed reluctance among nurses to record sessions for assessment of performance. Other reasons might pertain to organizational issues: during the training period, nurses frequently reported large caseloads, time pressures, and, in some instances, insufficient support from management. Similar observations of organizational issues have been made in other MI training or implementation studies within different services (Moyers et al., 2008; Soderlund and Nilsen, 2009).

As it has been suggested that pre-training MI-consistent skills and motivation to learn MI improves the acquisition of proficiency (Baer et al., 2004; Miller et al., 2004; Moyers et al., 2008), a third possible explanation is that our training sample possessed fewer basic skills and less motivation than samples in other studies, although this remains a speculation since we did not measure these variables. However, since 64% of the nurses had prior MI training of some kind and they themselves enrolled for participation in the study, the explanation might not be valid.

Limitations and strengths

Several limitations of the present study should be noted. First, the lack of pre-training assessment rendered it impossible to evaluate the separate effect of the workshop training. Second, sessions for the MITI coding were selected on different grounds: training sessions were self-selected, whereas trial sessions were randomly selected. This procedure could have obscured the effects of supervision on proficiency, as the training sessions to a larger extent might reflect “best practice”. Moreover, trial sessions were conducted according to the PRIMROSE intervention manual, which could have further obscured the effects of supervision since MI is a client-centered approach and the use of a manual may detract focus from the client and relocate it to the manual (Lundahl et al., 2010). Third, estimates of proficiency were based on coding of a single session per assessment point, thus making estimates sensitive to session-specific circumstances. Moreover, several of the indicators of proficiency were not reliably assessed between raters, as indicated by ICCs below the “good” range. Raters reported that coding could have been negatively influenced by the fact that more often than not parents were accompanied by the PRIMROSE trial target child, and sometimes also a sibling. Finally, the small sample size resulted in low statistical power to detect any true effects and limited the number of possible adjustments in the regression analyses.

Despite these limitations, the present study contributes significantly to the body of knowledge on training in MI and has several strengths, the major one being the comprehensive training package offered to participants. The training covered five of the eight stages of learning MI (Madson et al., 2009; Miller and Moyers, 2007), and included didactic presentations and experiential exercises in a workshop format, conducted according to MINT recommendations, systematic feedback on MI performance using the MITI, supervision, and a website containing video recordings of workshop lectures and video illustrations of role-plays of MI principles and strategies. Our findings have important implications for training and for making the implementation of MI evidence-based.

Implications for training

To our knowledge, only two training studies to date, one constituting a replication of the other and both conducted by two of the most prominent MI researchers, have resulted in training samples reaching beginning proficiency thresholds on all indicators of proficiency at post-training assessment (Miller et al., 2004; Moyers et al., 2008). This indicates that the thresholds (which are based on expert opinion and lack validity data) may be set too high, and/or that MI is more difficult to learn than generally believed, even when workshop training is enriched by systematic feedback on MI performance and supervision on practice samples.

One approach to improve training in MI may be to continue to apply the more comprehensive training format, as employed in the present study and in other studies, but to put more emphasis on continuous feedback with objective behavioral measures and ongoing supervision; that is, “more of the same”, and hope for it to pay out well.

Another approach may be to complement, or perhaps to some extent even substitute, the conventional workshop learning methods of didactic presentations and short standard exercises with feedback on gradual skill building in clinical encounters with simulated clients, designed to be congruent with individual learning needs of the practitioner related to his or her everyday experience, thereby complementing or replacing the “one size fits all” workshop with a learner-directed, context-bound training (Baer et al., 2009; Rollnick, Kinnorsley and

Butler, 2002). Students post workshop are able to report on MI skills on clinical vignettes (Miller, Hedrick and Orlofsky, 1991), but these skills are, at best, moderately related to actual proficiency in sessions with clients (Miller and Mount, 2001; Miller et al., 2004), and since students can demonstrate skills immediately following training, but may not retain them at even short-term follow-ups (Baer et al., 2004; Miller et al., 2004), innovative methods of learning and training may be called for.

A subsample of students may not be able to acquire skillfulness in MI, no matter how extensive the training, feedback, and supervision being offered (Forsberg, Forsberg et al., 2010; Miller, Moyers, Arciniega, Ernst and Forcehimes, 2005; Moyers et al., 2008); some practitioners take on a new treatment method easily, whereas others may never do so. Therefore, a third approach to training may be to introduce a screening policy or selection process prior to training, to identify which practitioners will, with some degree of certainty, acquire proficiency, and allow these to enter training. Such a procedure has seldom been employed in MI training studies. An exception is the study by Miller et al. (2005), which used a pre-screen of demonstrated empathy prior to acceptance of practitioners for training. Other variables that might be useful for pre-screening are suggested by studies showing that basic clinical skills consistent with MI, educational level, and motivation to learn, result in better training outcomes (Baer et al., 2004, 2009; Miller et al., 2004; Moyers et al., 2008), as do lower endorsement of disease model beliefs and organizations encouraging staff to learn new treatment methods (Baer et al., 2009). Screening may also be based on personality traits (Miller et al., 2004) or cognitive abilities associated with learning. Future studies should evaluate which of the three suggested approaches is most effective in improving MI training outcome.

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