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Meta-analysis of the effects of MI training on clinicians' behavior

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ABSTRACT

MI-based interventions are widely used with a number of different clinical populations and their efficacy has been well established. However, the clinicians' training has not traditionally been the focus of empirical investigations. We conducted a meta-analytic review of clinicians' MI-training and MI-skills findings. Fifteen studies were included, involving 715 clinicians. Pre–post training effect sizes were calculated (13 studies) as well as group contrast effect sizes (7 studies). Pre–post training comparisons showed medium to large ES of MI training, which are maintained over a short period of time. When compared to a control group, our results also suggested higher MI proficiency in the professionals trained in MI than in nontrained ones (medium ES). However, this estimate of ES may be affected by a publication bias and therefore, should be considered with caution. Methodological limitations and potential sources of heterogeneity of the studies included in this meta-analysis are discussed.

Motivational interviewing (MI) is a counseling style defined by Miller and Rollnick (2009) as "a collaborative, person-centered form of guiding to elicit and strengthen motivation for change" (p. 137). Evolving from the experience of treating alcoholics, the concept of MI was developed as a way to help people not ready to change to work through ambivalence (Miller, 2012). Considered as a specific evolution of humanistic and client-centered counseling (Rogers, 1951), MI emphasizes the importance of an empathic counseling style in the therapeutic process (Miller, 2012; Miller & Rollnick, 2002). However, it departs from client-centered therapy, as it is consciously directive in order to address the resolution of ambivalence in the direction of change (Miller & Rollnick, 2009; Moyers & Rollnick, 2002).

In the past 25 years, MI has been increasingly used and evaluated in the field of alcohol and substance use disorders, but also for example in relation to HIV-risk behaviors, treatment compliance, health behavior change (e.g., physical exercise and diet) as well as a broad range of psychological problems (Arkowitz, Westra, Miller, & Rollnick, 2008; Hettema, Steel, & Miller, 2005). Since the end of the 90s, a strong evidence base for MI[2] has been reported in several reviews and meta-analyses (e.g., Burke et al., 2002; Burke et al., 2003; Carruzzo et al., 2009; Dunn, Deroo, & Rivara, 2001; Hettema et al., 2005; Lundahl, Kunz, Brownell, Tollefson, & Burke, 2010; Rubak, Sandbæk, Lauritzen, & Christensen, 2005). The evidence suggests that MI is superior to no-treatment control or waitlist (small to medium Cohen's *d* effect sizes) and equivalent to or potentially better than other recognized treatments (Lundhal & Burke, 2009). According to Burke et al. (2003), MI was shorter by an average of 180 minutes than alternative treatments and may consequently be more cost-effective. In summary, Motivational Interviewing is a well recognized evidence-based practice (EBP[3]) supported by more than two decades of research.

Despite the great effort by researchers to develop EBPs, several authors have underscored that practitioners were often not using what researchers had found to be efficacious, and that delivering EBPs in clinical settings poses significant challenges (e.g., Forsyth, Melton, & Summerfield Mann, 2005; Kendall & Beidas, 2007). In 2006, the American Psychological Association issued a policy statement that encourages integration of EBP in clinical practice (American Psychological Association & Presidential Task Force on Evidence-Based Practice, 2006), underlining the need to bridge the gap between research and practice that is particularly wide in the field of substance abuse treatment (Miller, Sorensen, Selzer, & Brigham, 2006). The transition from "bench to bedside" (Pentz, Jasuja, Rohrbach, Sussman, & Bardo, 2006, p. 247) remains an issue of critical importance for

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[2] In the literature, it has been common to combine the principles of MI with other techniques or to adapt specifically MI for use by non-specialists, which all have been labeled adaptations of MI (AMIs) (Burke, Arkowitz, & Dunn, 2002; Burke, Arkowitz, & Menchola, 2003). Consequently, most of the empirical studies have dealt with the efficacy of AMIs.

[3] EBP is defined by the American Psychological Association and Presidential Task Force on Evidence-Based Practice (2006, p. 273) as "the integration of the best available research with clinical expertise, in the context of patient characteristics, culture and preferences."

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disseminating EBPs into standard practice (Keller & Dermatis, 1999). Concerning this issue, training is a key medium through which clinicians may gain new skills, and thus constitutes an important step in the process of widespread dissemination and implementation of EBPs in routine practice (Beidas & Kendall, 2010). In the field of MI, since the second edition of the book by Miller and Rollnick (2002), there has been a rapid growth of training resources including treatment manuals (e.g., Rosengren, 2009; Walters, Clark, Gingerich, & Meltzer, 2007), textbooks (e.g., Arkowitz et al., 2008; Naar-King & Suarez, 2011) and training videos (e.g., Hettema, 2009). Meanwhile, since research on training is paramount to the incorporation of scientific knowledge into clinical practice settings (Hayes, 2002), there has been an increase of studies that focused on MI training in the literature (e.g., Miller & Mount, 2001; Shafer, Rhode, & Chong, 2004). More recently, Miller and Moyers (2006) identified, based on their experience of teaching MI, a set of eight theoretical stages to become expert in MI, and consequently reaching good MI adherence (i.e., the degree to which the therapist is using interventions consistent with MI) and competence (i.e., the quality of treatment delivery) may take several weeks or even months under the best circumstances. In a recent review, Madson, Loignon, and Lane (2009) indicated, however, that the most common format of MI training in the literature is rather short (1 or 2 days workshop/seminar including presentation of MI spirit and guided practical exercises). Several authors have consequently questioned the lasting effects of such training formats and have emphasized the need for coaching/supervision to improve MI learning (Martino, Ball, Nich, Frankforter, & Carroll, 2008; Miller, Yahne, Moyers, Martinez, & Pirritano, 2004). Despite a recent review suggesting that MI training globally generated positive outcomes (Söderlund et al., 2011), it would be valuable to quantify the average effect of MI training on clinicians, and to provide a statistical synthesis of the available data on MI training. Quantified knowledge about MI training effects would naturally be theoretically useful when considering the best way to train people in MI and even abandoning some methods of training in further research, but it would also be especially important and helpful for treatment facility directors and policy makers dealing with cost-effectiveness issues.

We conducted a meta-analysis to measure the impact of different types of MI training on clinicians' behavior in a variety of health care contexts. This study was therefore based on previous rare studies on MI training. In addition, we also considered data from MI efficacy studies, because important available data on the effectiveness of MI training are a byproduct of these efficacy studies (e.g., randomized clinical trials). Most of these studies are neither designed to specifically investigate the issue of MI training, nor, as underlined by Walters, Vader, Nguyen, Harris, and Eells (2010), "designed with dissemination in mind" (p. 284). Although developed essentially for training providers in a research context, these training efforts are an important step in the identification of best practices to teach MI and might be informative regarding the implementation of MI in the "real world" community (Keller & Dermatis, 1999; Walters, Matson, Baer, & Ziedonis, 2005).

To our knowledge, this is the first meta-analysis on the effects of MI training and the purpose of this study is to advance the MI training literature by providing a statistical synthesis of existing evidence on MI training.

1. Method

1.1. Literature searches

Comprehensive searches of the psychological literature in the *PsycINFO*, *Medline*, *CINHAL* and *Francis* databases were conducted as well as studies mentioned in books. We obtained article abstracts by cross-referencing the following search keywords: Motivational Interviewing (MI), Motivational Enhancement Therapy (MET), training and education. In our search for additional studies, we examined the reference sections of all retrieved studies, as well as in a set of systematic reviews and standard books on MI. Finally, the publication lists on the official MI Web site (motivationinterviewing.org) were also inspected.

1.2. Selection of studies

The search produced 252 studies. These identified studies were included in our meta-analysis if they met the following criteria: (1) at least one group of clinicians trained in MI or MET, in accordance with descriptions by Miller and Rollnick (2002) (2) a description of the MI or MET training, (3) at least one measure—not self-reported—of the impact of training on clinicians' skills in MI, (4) study results that provided sufficient information to compute common effect size statistics (supplemented, when necessary, by obtaining unpublished information from the authors), (5) studies completed between 1990 and 2010, (6) when there was a control group, random assignment of the clinicians to conditions. This resulted in a total of 20 studies, which were appraised independently and critically by two of us. For each study, relevant data were extracted using a coding form, which addresses both methodological and substantive characteristics: paper identification, setting, clinicians' characteristics, study design, training method, MI skills measurement, and means and standard deviations of clinicians' skills in MI before and after the training. Following a procedure proposed by Bullock and Svyantek (1985), the authors met regularly to discuss potential disagreement, and coding discrepancies were resolved by consensus discussion led by the first author.

1.2.1. Meta-analytic procedure

The meta-analysis was carried out using the Comprehensive Meta-Analysis computer software. The assessment of changes in practitioners' intervention was the focus. We calculated effect sizes (ES) on measures of practitioners' clinical proficiency and skillfulness. Two types of comparison were made, depending on the design of the study: between-group comparisons (group contrast) with studies including a training control group, and within-group comparisons (pre–post training) for studies with a no-training control group. For between-group and within-group comparisons, we calculated Hedges' *g* effect size and its 95% confidence interval (Hedges & Ollkin, 1985). According to Cohen (1988), Hedges' *g* may be interpreted as small (0.2), moderate (0.5), and large (0.8).

In cases where a study used more than one validated measure to examine practitioners' proficiency, the results of multiple measures were combined (standardized and averaged) in order to produce a single ES for any study. Moreover, in studies that had more than one MI training condition, each MI training condition was treated as an individual study. Concerning pre–post training group comparisons, computation of the mean proficiency gain ES involves obtaining a correlation between the time 1 and the time 2 values (Lipsey & Wilson, 2001), which are generally not reported, and in fact never mentioned in the articles included in this meta-analysis. To estimate this from outside sources, we used the test–retest correlation of each instrument, "since the variables at issue differ only with regard to time of measurement, the correlation between them should approximate the test-retest reliability" (Lipsey & Wilson, 2001, p. 43). We used the following correlations: $r = .89$ for the Motivational Interviewing Treatment Integrity (MITI; Brueck et al., 2009), $r = .45$ for the Helpful Responses Questionnaire (HRQ; Miller, Hedrick, & Orlofsky, 1991) and $r = .52$ for the Motivational Interviewing Skills Code (MISC; Moyers, Martin, Catley, Harris, & Ahluwalia, 2003). Finally, according to the dimensions of the MISC and the MITI, we set $r = .87$ as the percentage of MI-consistent statements. Note that this correlation affects the confidence interval around the mean effect size and the assessment of the degree of effect size heterogeneity, not the value of the effect size statistic (Lipsey & Wilson, 2001).