

Core Mechanisms of Change in Motivational Interviewing: An Attempt to Separate Relational from Technical Element Effects

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Abstract

This experiment used a dismantling approach to examine change mechanisms in motivational interviewing (MI). Seventy-two undergraduate participants who scored in the top 35th percentile on trait anger were randomly assigned to: full MI (FMI), spirit-only MI (SOMI), or psychoeducation. They met individually with an experimenter for one 30- to 45-minute session to discuss their anger. In the FMI condition, the relational and technical elements of MI were both used to elicit change talk. In the SOMI condition, the supportive and relational elements of MI were emphasized. In the psychoeducation condition, the focus was placed on teaching the components of anger episodes. Participants were then asked to launch a daily, online, deep breathing exercise during the following week. Results showed that participants in both MI conditions emitted more change talk than those in the psychoeducation condition. Independent session ratings showed that despite the attempted elimination of technical elements in the SOMI condition, the FMI and SOMI conditions did not differ on the experimenter's acceptance, empathy, direction, autonomy support, and collaboration. Also, results did not support the main effect on program launches. These results indicate it is challenging to separate relational from technical elements in MI and, thus, to identify core mechanisms of change.

Keywords: motivational interviewing, mechanisms of change, common factors, anger

Introduction

Various psychotherapies have been found to be effective for a variety of mental health disorders, with effect sizes typically ranging from moderate to large (Cuijpers et al., 2011; Hunot et al., 2007; Lambert & Bergin, 1994; Zhou et al., 2021). However, it remains unclear how many of these psychotherapies work (Kazdin,

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2007). Hoffman and Hayes (2019) recently revived Gordon Paul's (1969, p. 44) famous question, "What treatment, by whom, is most effective for this individual with that specific problem, under which set of circumstances, and how does it come about?" They revised it, asking, "What core biopsychosocial processes should be targeted with this client given this goal in this situation, and how can they most efficiently and effectively be changed?" (Hoffman & Hayes, 2019, p. 38).

Although there are several questions within Paul's (1969), and Hoffman and Hayes' (2019) statements, the main concern is how do treatments actually work. Identifying core mechanisms of change can lead to increased effectiveness and the elimination of neutral or even iatrogenic ingredients. Additionally, validating the core mechanisms of change for a treatment improves the validity of that treatment's underlying theory. For example, although cognitive therapy (CT) asserts that challenging and replacing maladaptive thoughts and beliefs with those that are more adaptive leads to improved outcomes, findings are mixed for replaced thoughts as the mechanism of change (Kazdin, 2007; Podina et al., 2019; Tang et al., 2005). Arch and colleagues (2012), for example, compared cognitive behavioural therapy (CBT) to acceptance and commitment therapy (ACT) by randomly assigning anxious clients to receive CBT or ACT. Both were effective in reducing anxiety, but a mediation analysis showed that both treatments may have been effective through cognitive defusion, which is *not* the hypothesized mechanism of change in CT. Thus, it is possible that challenging and replacing thoughts and beliefs might be receiving too much focus and cognitive defusion may not be given enough attention, leading to unnecessary interventions and slower improvement.

In addition to mediation analyses, core mechanisms of change can be identified through dismantling studies. In fact, dismantling studies have been described as the "gold standard" for identifying specificity (i.e., identifying the effective ingredient in treatment; Borkovec, 1990; Borkovec & Costonguay, 1998). The objective of dismantling studies is to isolate the hypothesized mechanism of change through an experimental design. One condition is comprised of the complete treatment and the other excludes the hypothesized mechanism of change. Thus, if the conditions are the same, apart from the supposed mechanism of change, and they produce different results in the hypothesized direction, then it could be concluded the presumed mechanism of change is responsible for the differential outcomes.

Mediation and dismantling studies have led to the identification of several mechanisms of change such as exposure processes and inhibitory learning (Craske et al., 2008; van den Berg et al., 2015), cognitive defusion (Arch et al., 2012), acceptance (Gifford et al., 2011), shaping (Busch et al., 2009), mentalizing (Fonagy & Bateman, 2006; Forster et al., 2014), self-understanding (Gibbons et al., 2019; Jennissen et al., 2018), cognitive restructuring (Tang et al., 2005), behavioral activation (Jacobson et al., 1996; Santos et al., 2019), and mindfulness (Batink et al., 2013; Geschwind et al., 2011). Dismantling studies have also identified extraneous treatment elements such as the eye movement element of eye movement desensitization and reprocessing (EMDR). EMDR appears to work through exposure

processes and inhibitory learning, not through the eye movement element as previously hypothesized (Davidson & Parker, 2001; van den Berg et al., 2015).

Yet, reviews have also yielded problematic results. A meta-analysis of 27 dismantling studies that investigated various interventions found no differences in outcomes between psychological treatments with the hypothesized core element and those without it (Ahn & Wampold, 2001). In fact, they found a negative effect size ($d = -0.20$), suggesting that partial treatments (i.e., treatments without the assumed active element) are sometimes more beneficial than the full treatment. Bell and colleagues (2013) conducted a similar meta-analysis of 30 dismantling studies and found no significant difference between groups when the hypothesized core elements were removed, supporting Ahn and Wampold's earlier findings.

The inconsistent results regarding the identification of mechanisms of change could be due to the amount of variance accounted for by relational elements, also known as common factors (e.g., empathy, collaboration, therapeutic alliance). Common factors have consistently been shown to account for 30 to 50% of psychotherapy outcomes (Cuijpers et al., 2012; Horvath & Greenberg, 1986; Luborsky et al., 1988). Given that relational elements are present in the delivery of both conditions of dismantling studies, it is difficult to isolate such common factors and test for their effects (Bell et al., 2013).

Motivational Interviewing

One approach that relies heavily on relational elements is motivational interviewing (MI; Miller & Rollnick, 2013). The relational tone between helpers and clients, also known as the *spirit* of MI conversations, is characterized as empathic, non-judgmental, collaborative, and emphasizing client autonomy. Yet, MI also relies on technical elements or practitioner attempts to evoke clients' own motivation to make changes, known as *change talk*. Thus, a practitioner might say, "If you were to be more supportive of your son's attempts to do well in school, why would that be a good thing?" Or, "Sounds like you want your son to be successful?" The practitioner strategy in this example would be to elicit responses such as, "If he was doing better, I would worry less about him." Or, "It's important for him to be able to support himself in the future."

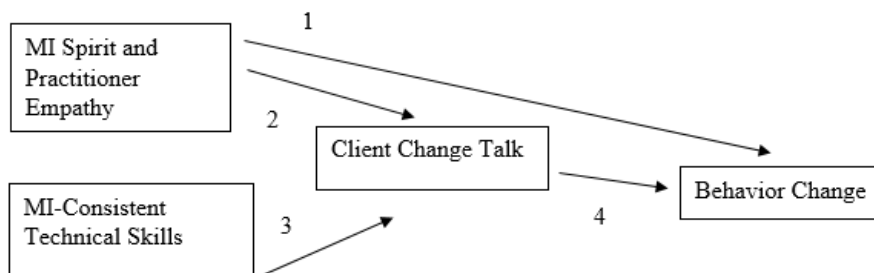
MI has been shown to be effective for a variety of substance use problems, including alcohol, heroin and cocaine, amphetamine, marijuana, nicotine, and polydrug use; as well as clinical difficulties such as anxiety, depression, suicidal ideation, gambling, and eating disorders; along with physical health issues; and increasing treatment adherence (Burke et al., 2003; Hettema et al., 2005; Lundahl & Burke, 2009; Lundahl et al., 2010; Vasilaki et al., 2006). However, similar to research findings about CBT, there are conflicting findings regarding the core mechanisms of change in MI.

In 2009, Miller and Rose proposed that MI works to produce behaviour change through both relational and technical elements (see Figure 1). The relational element

focuses on the collaborative and empathic spirit shown by the practitioner, which fosters acceptance, autonomy and self-exploration. In contrast, the technical element focuses on eliciting client change talk. Miller and Rose (2009) noted that the relational and technical elements interact with one another leading first to increased change talk and then to behaviour change.

Figure 1

Proposed Elements in Motivational Interviewing



Note. Adapted from Miller and Rose (2009).

The Relational Hypothesis

The relational hypothesis refers not to *what* is said, but rather *how* it is said (Miller & Rose, 2009). Much earlier, Rogers (1959) proposed that empathy is a necessary and sufficient condition for behaviour change. In contrast, Miller and Rollnick (2013) assert that empathy, a component of MI spirit, is necessary but suggest it may not be sufficient for behaviour change.

At this point, the effects of MI spirit on treatment outcomes are under-researched (Romano & Peters, 2015), making it difficult to draw definitive conclusions about the relational hypothesis. Nevertheless, some correlational and experimental research suggests that MI spirit does lead to behaviour change (Baird et al., 2007; Kaplan et al., 2013; Valle, 1981). For example, relational skills have been shown to be associated with fewer positive breathalyser results at a two-year follow-up (Miller & Baca, 1983), a decrease in self-reported alcohol use in hospital settings (Gaume et al., 2008), and self-reported decreased cannabis use in young adults (McCambridge et al., 2011).

More broadly, a meta-analysis of 59 psychotherapy studies found empathy to be a moderate predictor of treatment outcomes, regardless of theoretical orientation (Elliott et al., 2011). In a review of the MI literature, Moyers and Miller (2013) concluded that low empathy is related to adverse treatment outcomes and accurate empathy is a reliable predictor of treatment success.

Yet, other studies have found no relationship between MI spirit and client outcomes (Strang & McCambridge, 2004; Tollison et al., 2013). A meta-analysis that examined mechanisms of change in 19 MI studies found that MI spirit was not

related to client outcomes (Apodaca & Longabaugh, 2009). In recent reviews, Romano and Peters (2015, 2016) stated that the mixed findings regarding the effect of MI spirit on behaviour change make it difficult to draw support for the relational hypothesis. One likely reason for the mixed finding is the difficulty parsing relational elements from the technical elements used in MI.

The Technical Hypothesis

There are two parts to the technical hypothesis: practitioners evoking change talk and, consequently, client change talk leading to behaviour change (Miller & Rose, 2009). As noted, the frequency of client change talk is conceptualized as a mediating variable between practitioner verbal behaviour and client behaviour change (Amrhein et al., 2003; Daeppen et al., 2007). Studies have examined both parts of the technical hypothesis separately, as well as in a full mediation model, and have provided some support for it (Romano & Peters, 2016).

Research that examined practitioner verbal behaviour, participant change talk, and behaviour change has generally been correlational in design. Recognizing this, three studies experimentally tested the mediational aspect of the technical hypothesis (Barnett et al., 2014; Moyers et al., 2009; Pirlott et al., 2012). Moyers and colleagues (2009) examined videotapes of the MI condition from Project MATCH (1997a). They found that practitioners who demonstrated the technical elements of MI were likely to increase client change talk, and that client change talk was associated with a decrease in reported alcoholic drinks per week. Barnett et al. (2014) found similar results when they examined the effect of MI on adolescent, self-reported marijuana use.

Using a non-clinical sample, Pirlott et al. (2012) examined the effect of MI on firefighters' exercise behaviour and consumption of fruits and vegetables, over a 12-month period. They found that practitioner use of the technical elements of MI had a direct effect on client change talk and client change talk had a direct effect on self-reported healthy behaviours (i.e., exercise, and fruit and vegetable consumption). In addition, practitioner use of the technical elements of MI indirectly affected behaviour change, once again supporting the technical hypothesis. Of note, it was found that change talk also mediated the relationship between MI spirit and behaviour change. This finding, that MI spirit led to an indirect effect on behaviour change, is consistent with the blending of the relational and technical hypotheses proposed by Miller and Rose (2009; see Figure 1).

Yet, change talk acting as a mediating variable was not found in other studies. In a sample of heavy drinking college students, Vader and colleagues (2010) found a significant, *inverse* relationship between client change talk and reported alcohol consumption. Additionally, they did not find change talk to be a mediating variable between practitioner use of technical elements and self-reported alcohol consumption, providing no support for the technical hypothesis. Billingsley and Steinberg (2021) randomly assigned 82 nicotine smokers with serious mental illness to a single session of MI or to an education condition. Although participants in the

MI condition emitted more change talk than participants in the education condition, change talk was not found to be a mediating variable for smoking cessation. It also did not predict a quit attempt or further follow-up with a treatment provider.

Attempts to Separate Relational and Technical Elements in MI

To make sense of the contrasting findings for the relational and technical hypotheses, Morgenstern et al. (2012) completed a dismantling study by randomly assigning 89 problem drinkers to four sessions of one of three conditions: full MI (FMI; relational and technical elements), spirit-only MI (SOMI; relational MI emphasizing warmth, openness, and simple reflections without a focus on change talk), or a self-change condition (which consisted of participants being asked to change their own behaviour by their own means). Results showed that clients in the FMI condition emitted the most change talk. Consistent with previous research (Project MATCH, 1997a, 1997b; UKATT, 2005), it was found that the FMI condition led to reduced drinking behaviour more quickly than the other two conditions; however, there was not a statistically significant difference between the three conditions by the end of treatment, as participants in all three groups reported a significant decrease in alcohol consumption. Thus, the other two conditions had caught up to the FMI condition. In addition, clients in the FMI and SOMI conditions continued to decrease their use at a similar amount at one-month follow-up, compared to the self-change condition. Over time, participants in the SOMI condition looked similar to those in the FMI condition.

The Morgenstern study demonstrates how difficult it is to find consistent, empirical support for theoretical conceptualizations of the core mechanisms of change in MI. Change talk may not be the mechanism of behaviour change for MI, similar to the finding that eye movement is not the specific ingredient leading to change in EMDR (Davidson & Parker, 2001) and cognitive restructuring may not be the mechanism of change in CT (Arch et al., 2012). Taken as a whole, these findings show the importance of conducting further mediation analysis and dismantling studies to better understand how MI works.

In the present project, a dismantling study similar to that of Morgenstern and colleagues (2012) was conducted. The efficacy of MI on treatment adherence (i.e., launching a recommended deep breathing computer program) was explored in a sample of angry college students. MI is often recommended when working with angry clients (e.g., Kassinove & Tafrate, 2019), however, little research has examined its effects in angry individuals.

Hypothesis One

It was expected the experimenter in the FMI condition would be rated as higher on six ratings (i.e., acceptance, empathy, direction, autonomy support, collaboration, and evocation) compared to the experimenter in (a) the SOMI condition and (b) the

psychoeducation condition. Additionally, (c) it was expected that the experimenter in the SOMI condition would be rated higher on the same six ratings compared to the experimenter in the psychoeducation condition.

Hypothesis Two

A main effect of intervention was predicted. Participants in the FMI condition were expected to emit more change talk than those in (a) the SOMI condition, and (b) the psychoeducation condition. Additionally, (c) participants in the SOMI condition were expected to emit more change talk than those in the psychoeducation condition.

Hypothesis Three

It was predicted that the participants in the FMI condition would be rated as higher on participant self-exploration compared to the participants in (a) the SOMI and (b) the psychoeducation conditions. Additionally, (c) participants in the SOMI condition were expected to be rated higher on self-exploration than participants in the psychoeducation condition.

Hypothesis Four

As a main effect, participants in the FMI condition were expected to more frequently launch a deep breathing computer program than those in (a) the SOMI condition, and (b) the psychoeducation condition. Additionally, (c) participants in the SOMI condition were expected to more frequently launch a deep breathing computer program than those in the psychoeducation condition.

Method

Participants

Seventy-two non-treatment-seeking undergraduate students who scored in the top 35th percentile on trait anger participated. They were recruited from an American university in the Northeast region. They ranged in age from 18 to 25. Seventy-two per cent were women ($n = 52$) and 28% were men ($n = 20$). Approximately 48% were White, 8% were Black, 14% were Latino, 22% were Asian, and 8% were from multiracial backgrounds. An ANOVA did not yield significant differences on trait anger by condition, $F(2, 69) = .41, p = .66$. Participants were compensated with class credit. The study was approved by the university IRB.

Design and Procedure

Upon meeting with the experimenter, participants signed an Informed Consent form, a waiver in which they agreed to be recorded, a demographic information form,

and completed the State-Trait Anger Expression Inventory-2 (STAXI-2; Spielberger, 1999). Participants that scored above the cut-off on trait anger were randomly assigned to one of three conditions: full MI (FMI), spirit-only MI (SOMI), or psychoeducation about anger. In the FMI condition ($n = 24$), the experimenter used both relational and technical elements (e.g., used OARS' communication style i.e., open-ended questions, affirmations, reflections, and summaries) to relate to the participant and actively attempted to evoke change talk regarding the negative aspects of anger. For example, if a participant in the FMI condition said, "I was right to get in the guy's face and confront him" the experimenter would respond with an open question "What was the downside to confronting him?" In the SOMI condition ($n = 24$), the experimenter also used relational elements (i.e., OARS skills), but did not attempt to elicit participant change talk about anger. For example, in response to the participant's statement as above, the experimenter simply reflected the meaning behind what the participant said with a statement such as "At that moment, confronting him seemed natural." Finally, in the psychoeducation condition ($n = 24$), the experimenter presented information about anger, including the negative outcomes of anger, and described the anger episode model (Kassinove & Tafrate, 2019). Participants learned how to identify the components of anger by reviewing one of their anger episodes.

Participants met individually with the experimenter for a single 30- to 45-minute session that focused on their anger. At the end of the session, they were asked to complete a daily, online five-minute deep breathing exercise the following week. Participants' change talk and homework adherence (i.e., the total launches of the online program) were the key dependent variables.

Coding System

All sessions were videotaped and coded using the *Motivational Interviewing Skills Code 2.5* (MISC; Houck et al., 2010), a comprehensive coding system that allows for sequential coding of verbal behaviour between the experimenter and the participants. Participants' verbalizations were coded as change talk if their language was in favour of changing their anger (i.e., desire, belief in their ability to make changes, reasons to do so, needing to do so, commitment, taking steps).

Experimenter behaviour was coded for six categories: acceptance, empathy, direction, autonomy support, collaboration, and evocation. Acceptance was defined as the experimenter communicating unconditional positive regard. Empathy was indicated by the experimenter understanding of the participants' perspective. Direction was the degree to which the experimenter maintained focus on a specific target (i.e., the participants' anger). Autonomy was defined as the experimenter showing support for the participants' ability to choose, as opposed to imposing a decision. Collaboration was the degree to which the experimenter worked with the participant as an equal. Evocation occurred when the experimenter evoked participant change talk.

Participants were coded on self-exploration – the participants’ highest point of reflecting on “personally relevant material” (Houck et al., 2010, p. 14). Personally relevant material could include expression or exploration of personal problems, values, expression of emotions, being vulnerable, perceptions of self-worth, and the participants’ perceptions of their relationships with others.

A 5-point Likert scale was used for the ratings, with one being the lowest and five being the highest. Scores of four and five were considered optimal and to be consistent with MI theory. Eight undergraduate double-blind research assistants were responsible for coding the sessions. Similar to prior studies, coders received approximately 40 hours of training on the MISC 2.5 over the course of six months (Strang & McCambridge, 2004). Coding incongruencies between pairs were discussed and resolved before continuing to code the videos. The intraclass correlation coefficient (ICC) among the coders was excellent (>.97).

Results

Finding One – Ratings of the Experimenter

Independent ratings by the research assistants demonstrated experimenter adherence to the relational elements of MI (as seen by the experimenter’s global ratings of four or greater on acceptance, empathy, direction, autonomy support, and collaboration), but not to the technical elements of MI (as seen by the lack of difference between FMI and SOMI on evocation; see Table 1).

Table 1

Means and Standard Deviations of MISC Experimenter Ratings across Conditions

Experimenter Ratings	FMI <i>M (SD)</i>	SOMI <i>M (SD)</i>	Psychoeducation <i>M (SD)</i>
Acceptance	4.38 (0.65)	4.50 (0.66)	4.09 (0.85)
Empathy	4.42 (0.65)	4.50 (0.78)	4.17 (0.83)
Direction	4.33 (0.64)	4.08 (0.83)	4.09 (0.90)
Autonomy Support ^{a=*}	4.13 (0.61)	3.92 (0.50)	3.65 (0.57)
Collaboration ^{a=*,b=†}	4.38 (0.71)	4.29 (0.69)	3.78 (0.95)
Evocation ^{a=*,b=†}	4.29 (0.55)	4.17 (0.64)	3.74 (0.92)

Note. ^a = A significant difference between the FMI and psychoeducation conditions. ^b = A significant difference between the SOMI and psychoeducation conditions. † = $p < .10$; * = $p < .05$.

Six analyses of variances (ANOVAs) were conducted, one for each global rating (see Table 2). The ANOVAs indicated that the experimenter in the FMI condition was rated as showing higher levels of autonomy support, collaboration, and evocation compared to the experimenter in the psychoeducation condition, $p < .05$. ANOVAs also showed that the experimenter in the SOMI condition was rated

as higher on collaboration and evocation than in the psychoeducation condition, albeit at a trend level, $p < .10$. Although the experimenter was coded as being MI-adherent in the FMI and SOMI conditions, the two conditions did not statistically differ from one another across any of the ratings, only partially supporting this hypothesis.

Table 2

ANOVAs of MISC Experimenter and Participant Ratings across Conditions

		Sum of Squares	df	Mean Square	F	Sig.
Acceptance	Between Groups	2.10	2	1.05	2.01	.14
	Within Groups	35.45	68	0.52		
	Total	37.55	70			
Empathy	Between Groups	1.34	2	0.67	1.17	.32
	Within Groups	39.14	68	0.58		
	Total	40.48	70			
Direction	Between Groups	0.98	2	0.49	0.77	.47
	Within Groups	42.99	68	0.63		
	Total	43.97	70			
Autonomy Support	Between Groups	2.63	2	1.32	4.13	.02
	Within Groups	21.68	68	0.32		
	Total	24.31	70			
Collaboration	Between Groups	4.80	2	2.40	3.84	.03
	Within Groups	42.50	68	0.63		
	Total	47.30	70			
Evocation	Between Groups	3.92	2	1.96	3.84	.03
	Within Groups	34.73	68	0.51		
	Total	38.65	70			
Participant Exploration	Between Groups	28.28	2	14.12	16.22	<.001
	Within Groups	59.22	68	0.87		
	Total	87.47	70			

Finding Two – Participant Change Talk

Hypothesis two was partially supported. As expected, a Kruskal Wallis H test demonstrated a significant difference in participant change talk ($H(2) = 34.73$, $p < .01$, $\eta^2 = .47$) between FMI (mean rank = 50.80) and SOMI (mean rank = 42.06) as compared to the psychoeducation condition (mean rank = 16.65; $p < .01$), but not between FMI and SOMI, $p > .05$. Additionally, a Process Macro (Model 4; used to test for mediation analyses) did not support the hypothesis that change talk mediated the relationship between intervention condition and launches [CI = -.46 to .43].

Finding Three – Participant Self-Exploration

Partial support was found for hypothesis three. An ANOVA indicated that there was a significant main effect of condition on participant self-exploration, $F(2, 68) = 16.22, p < .001$. A Tukey post hoc analysis indicated that participants in the FMI ($M = 4.00, SD = 0.83$) and SOMI ($M = 4.00, SD = 1.06$) conditions were rated as having higher levels of self-exploration than those in the psychoeducation condition ($M = 2.65, SD = 0.89$). However, participants in the FMI ($M = 4.00, SD = 0.83$) condition were not rated as higher than those in the SOMI ($M = 4.00, SD = 1.06$).

Finding Four – Launches

Non-parametric tests were used due to the launch data being abnormally distributed. Contrary to the hypothesis, a Kruskal Wallis H test did not support a significant main effect of intervention on participant launches of the deep breathing program, $H(2) = 0.36, p = .84, \eta^2 = .02$. Participants in the FMI condition were not more likely to launch the deep breathing program (total launches = 17) compared with participants in the SOMI condition (total launches = 18), nor the psychoeducation condition (total launches = 12). For context, if every participant launched the computer program daily, it would be 168 launches per condition.

Discussion

It is difficult to draw conclusions from the current dismantling study. However, when considered in conjunction with the Morgenstern et al. (2012) study and previous research (Ahn & Wampold, 2001; Bell et al., 2013) a theme emerges. When looking at MI, it is challenging to separate the relational elements from the technical elements. As seen by the ratings in Table 1, the experimenter was somewhat successful in differentiating his behaviour in the FMI and SOMI conditions from his actions in the psychoeducation condition. However, even though the experimenter was rated as MI-adherent in FMI and SOMI, the two conditions were not clearly differentiated in terms of independent ratings of sessions (i.e., acceptance, empathy, direction, autonomy support, collaboration, evocation), frequency of change talk, and participant self-exploration. Both conditions may have contained portions of the relational and technical elements of MI. Miller and Rollnick (2013) suggested that it is difficult to distinguish between the technical and relational elements in an experiment and the current results may reflect that difficulty.

Prior to conducting this study, one of us (TD) met with Dr Jon Morgenstern individually to obtain additional details about the difference in application between the FMI and SOMI conditions in their study (J. Morgenstern, personal communication, November 1, 2017). We came across a conundrum: if a participant

in the SOMI condition is emitting change talk, do you reflect it back? In this scenario, providing such a reflection would make the condition similar to the FMI condition because the technical element of reinforcing change talk, by reflecting it, is now being applied. Yet, it would be counter to the requirements of the SOMI condition to not reflect back the meaning of participants' statements. Essentially, how do you adequately parse the technical element from the relational element, and maintain fidelity to the technical and relational conditions? Similar concerns were experienced by Morgenstern as the two elements sometimes overlapped and could not be cleanly separated. After consultation, we decided that in order to be true to the requirements of the SOMI condition and to follow suit with Morgenstern and colleagues (2012), we would reflect back participants' change talk. This was an unsatisfying solution because relational elements were being intertwined with technical elements.

What Does This Mean for Dismantling Studies of MI?

The convergent results of Morgenstern and the present project leave us pessimistic about using dismantling studies to untangle the relational and technical elements of MI. It may not be possible to disaggregate the active ingredients in approaches where the relationship is critical, which is the case in most psychotherapies including MI. As discussed by Miller et al. (2013) in a DVD presentation, "It's not just a technical matter of responding to talk in different ways. There's this interpersonal context that holds the whole thing together." This is also consonant with Gestalt theory which says that "the whole is different than the sum of its parts" (Heider, 1977, p. 383). It could be that disentangling the relational and technical elements in MI does not account for the summative effect between the two and, thus, does not tell the whole story.

Rather than trying to develop a perfect dismantling study for MI, it may be more feasible to study variations of specific technical elements. To do this might require removing the relational elements altogether, perhaps by delivering interventions through computer simulations or by text alone. For example, participants with a similar clinical problem could run through computer programs designed to compare reflections to open or closed-ended questions, simple reflections to complex reflections, questions designed to elicit change talk versus sustain talk, etc. It may also be possible to compare specific technical elements and delivery modalities such as a statement designed to elicit change talk that is delivered by a live person versus a computer versus a text. Even text messages could be designed to reflect MI spirit at different levels of intensity. Of course, such experiments would be limited and would not reflect how the treatment is conducted in the context of the real world.

Limitations and Future Directions

This study used a non-treatment-seeking sample and, thus, the results may not apply to a clinically angry population. Anger is certainly understudied, as for every

article published on anger, there are seven on anxiety and ten on depression (Kassinove & Sukhodolsky, 1995). The present results also may not apply to other clinical problems such as anxiety. It could be, for example, that angry individuals are less likely to follow practitioner suggestions in comparison to clients who suffer from anxiety. Clients who suffer from anger are often coerced into treatment by others and consequently have low motivation (Howells & Day, 2003). In contrast, clients who suffer from anxiety are more inclined to seek help and to follow practitioner advice.

The lead researcher was aware of the hypotheses and was the experimenter in all conditions. Although this minimized some potential confounding variables, the results may have reflected specific experimenter's characteristics. Future studies would benefit from use of multiple experimenters. Additionally, the sample size was decided upon in order to find a large effect. Small and moderate effects may have been undetected. Finally, the short length of the present intervention may not have been enough to produce meaningful homework adherence effects.

Conclusion

We are not concluding that unique technical elements do not exist or do not add value to MI outcomes. Rather, their value may work through the Gestalt of treatment. We also do not conclude that there is no appeal to dismantling studies. They have been helpful in raising doubts about the core elements of several popular treatments (e.g., EMDR, CT). Dismantling studies simply have practical limitations in terms of examining the relational elements of MI and it would be wise for researchers to know of those limitations in advance. Additionally, the lack of ability to parse apart the relational elements from the technical elements makes it difficult to answer Hoffman and Hayes' (2019) question regarding how treatments work. The effect of the relational elements just may not be quantifiable.

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Temeljni mehanizmi promjene kod motivacijskoga intervjuja: Razlikovanje učinaka relacijskih i tehničkih elemenata

Sažetak

U ovome je eksperimentu korišten tzv. pristup rastavljanja da bi se ispitali mehanizmi promjene u motivacijskome intervjuu (MI). Sedamdeset i dva studenta preddiplomskoga studija koja su se nalazila u gornjih 35 percentila na osobini ljutnje nasumično su raspoređena u sljedeće skupine: potpuni MI (PMI), relacijski MI (RMI) ili psihoedukacija. Svaki se sudionik individualno sastao s eksperimentatorom (terapeutom) na jednoj seansi u trajanju od 30 do 45 minuta da bi razgovarao o svojoj ljutnji. U uvjetu potpunoga MI-ja korišteni su relacijski i tehnički elementi da bi se potaknuo razgovor o promjeni, dok je u uvjetu relacijskoga MI-ja naglasak bio na relacijskim i suportivnim elementima. U uvjetima psihoedukacije fokus je stavljen na podučavanje o komponentama ljutnje. Sudionici su zatim zamoljeni da tijekom sljedećega tjedna putem interneta koriste dnevnu vježbu dubokoga disanja. Rezultati su pokazali da su sudionici u obama uvjetima motivacijskoga intervjuja iskazivali više govora o promjeni (engl. *change talk*) u odnosu na grupu koja je sudjelovala u psihoedukaciji. Nezavisne procjene seansi pokazale su da se, unatoč pokušaju eliminacije tehničkih elemenata u uvjetu relacijskoga MI-ja, uvjeti PMI-ja i RMI-ja nisu razlikovali u terapeutovu prihvaćanju, empatiji, usmjeravanju, podršci autonomije i suradnji. Također, nije dobiven efekt grupe na pokretanje vježbe dubokoga disanja. Ti rezultati pokazuju da je teško odvojiti relacijske od tehničkih elemenata u MI-ju i prema tome identificirati temeljne mehanizme promjene.

Ključne riječi: motivacijski intervju, mehanizmi promjene, zajednički čimbenici, ljutnja

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