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Identifying content-based and relational techniques to change behaviour in motivational interviewing

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ABSTRACT

Motivational interviewing (MI) is a complex intervention comprising multiple techniques aimed at changing health-related motivation and behaviour. However, MI techniques have not been systematically isolated and classified. This study aimed to identify the techniques unique to MI, classify them as content-related or relational, and evaluate the extent to which they overlap with techniques from the behaviour change technique taxonomy version 1 [BCTTv1; Michie, S., Richardson, M., Johnston, M., Abraham, C., Francis, J., Hardeman, W., … Wood, C. E. (2013). The behavior change technique taxonomy (v1) of 93 hierarchically clustered techniques: Building an international consensus for the reporting of behavior change interventions. *Annals of Behavioral Medicine*, 46, 81–95]. Behaviour change experts ($n = 3$) content-analysed MI techniques based on Miller and Rollnick's [(2013). *Motivational interviewing: Preparing people for change* (3rd ed.). New York: Guildford Press] conceptualisation. Each technique was then coded for independence and uniqueness by independent experts ($n = 10$). The experts also compared each MI technique to those from the BCTTv1. Experts identified 38 distinct MI techniques with high agreement on clarity, uniqueness, preciseness, and distinctiveness ratings. Of the identified techniques, 16 were classified as relational techniques. The remaining 22 techniques were classified as content based. Sixteen of the MI techniques were identified as having substantial overlap with techniques from the BCTTv1. The isolation and classification of MI techniques will provide researchers with the necessary tools to clearly specify MI interventions and test the main and interactive effects of the techniques on health behaviour. The distinction between relational and content-based techniques within MI is also an important advance, recognising that changes in motivation and behaviour in MI is a function of both intervention content and the interpersonal style in which the content is delivered.

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Motivational interviewing (MI) has been shown to be a promising approach for promoting health behaviour change in a number of contexts including substance abuse (Jenson et al., 2011), quitting smoking (Heckman, Egleston, & Hofmann, 2010; Lai, Cahill, Qin, & Tang, 2010), physical activity promotion (Bennett, Lyons, Winters-Stone, Nail, & Scherer, 2007; Carels, Darby, Cacciapaglia, Konrad Coit, & Harper, 2007; Hardcastle, Blake, & Hagger, 2012; Hardcastle, Taylor, Bailey, & Castle, 2008; O'Halloran

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et al., 2014), and dietary change (Armstrong et al., 2011; Befort et al., 2008). MI can be considered a *complex intervention* comprising multiple techniques to promote behaviour change. Complex interventions have posed considerable challenges to researchers attempting to identify the mechanisms underpinning their effects and replicate them. This is because tests of interventions adopting one-way designs that compare the effects of the intervention against a no-intervention control preclude the researcher from isolating the individual components of the intervention that are effective in changing behaviour. It is only through the systematic specification of the intervention to isolate its separate techniques, and the subsequent tests of specific techniques in factorial designs that can allow the researcher fully evaluate which techniques are effective in changing health behaviour. Although researchers adopting MI interventions have described the general characteristics of MI interventions in some detail (e.g., identifying who delivers the intervention, how often the intervention sessions are delivered and duration of sessions, context in which the intervention is presented), attempts to distil the specific MI techniques have been impeded because descriptions of exact content of the intervention have lacked detail, precision, and clarity. While the issue of interventions being poorly defined is not confined to MI, it is particularly pertinent given that MI is a complex intervention comprising multiple techniques.

There has been considerable progress in the scientific literature on identification and isolation of the single components or *techniques* adopted in interventions to change behaviour. The systematic classification of behaviour change intervention components has resulted in the development of taxonomies of the individual techniques of interventions that are effective in changing the antecedents of behaviour in health-related behavioural interventions (Abraham & Michie, 2008; Michie et al., 2011, 2013; Michie, Abraham, Whittington, McAteer, & Gupta, 2009). Following these developments, the purpose of the present article is to identify the specific techniques employed in MI and examine the extent to which these techniques are unique or exhibit overlap with behaviour change techniques identified in the most recent behaviour change techniques taxonomy (BCTTv1; Michie et al., 2013). We expect our research to advance knowledge by enhancing the conceptualisation and operationalisation of interventions adopting MI, classifying the techniques into categories relating to their function as content-related or relational techniques, and assessing the uniqueness of the MI techniques against the techniques identified in the most recent taxonomy of behaviour change techniques (Michie et al., 2013). The identification of the specific techniques that make up MI interventions will enable researchers to develop studies that may establish which of the techniques, or combination of techniques, is most effective in changing health behaviour. This will not only assist in identifying the key techniques, but will also assist researchers and practitioners increase the effectiveness and efficiency of their interventions (Hardcastle et al., 2015).

Isolating and identifying MI intervention components

MI has not been included in the most recent taxonomy of behaviour change techniques (Michie et al., 2013) because it was classified as an 'approach' rather than a single, behaviour change technique. It is, however, an approach that has been found to be efficacious in changing health behaviour, as evidenced in several systematic reviews and meta-analyses (Armstrong et al., 2011; Knight, McGowan, Dickens, & Bundy, 2006; Lundahl & Burke, 2009; Lundahl et al., 2013; O'Halloran et al., 2014; Rubak, Sandbaek, Lauritzen, & Christensen, 2005; VanBuskirk & Loebach Wetherell, 2014). For example, a meta-analysis of 72 randomised controlled trials using MI in health-related contexts revealed that it was more effective in improving both behavioural and health-related outcomes relative to usual care in 80% of studies (Rubak et al., 2005). However, despite the evidence in support of MI interventions in changing health-related behaviour, there are studies that have shown null findings on health behaviour change for MI-based interventions (Craigie, Macleod, Barton, Treweek, & Anderson, 2011; Greaves et al., 2008). Resolving these inconsistencies presents a challenge to researchers attempting to evaluate the value of adopting MI as a possible approach to use when designing behaviour change interventions and makes understanding of the exact processes and mechanisms that underpin MI's

effectiveness an imperative. In our view, there are three main barriers to understanding the effectiveness of MI-based interventions: (1) the complexity of MI as an intervention comprising multiple behaviour change techniques and relational techniques, as we noted in our earlier discussion (Hagger & Hardcastle, 2014); (2) poor reporting of MI intervention content; and (3) the lack of research on the specific techniques of MI that are affecting behaviour change.

The need for better reporting of MI techniques

MI comprises of several techniques used by practitioners to evoke motivation and behaviour change in clients. A key feature of MI is that it comprises techniques that differ in function. Some MI techniques focus on *content* of the intervention, which reflect the information and knowledge provided to intervention recipients to promote behaviour change (e.g., exploration of pros and cons). These techniques are similar to the operationalisation of techniques identified in taxonomies of behaviour change techniques. In contrast, MI also comprises techniques that reflect the interpersonal style of delivery in which the content-based techniques are presented by the practitioner to increase their effectiveness. These *relational* aspects and are usually referred to collectively as the MI 'spirit' (Miller & Rollnick, 2013). However, the individual techniques of MI interventions have not been systematically documented. In addition, reporting of the content of interventions adopting MI is often brief and lacking in specific detail making it difficult to replicate or pinpoint the precise techniques that may be affecting behaviour change. Many MI studies lack detail in their descriptions of the precise techniques adopted, how they were delivered, practitioner training and competency in MI (Douaihy, Kelly, & Gold, 2014) and some do not provide any detailed description of the MI intervention components at all (e.g., Ackerman, Falsetti, Lewis, Hawkins, & Heinschel, 2011; Armit et al., 2009; Harland et al., 1999; Kerse, Elley, Robinson, & Arroll, 2005; Lawton et al., 2008; Penn et al., 2009; Whittemore et al., 2009). Such intervention reporting presents considerable challenges to researchers attempting to replicate the intervention and to understand how the intervention works, although these shortcomings are not limited to MI interventions (Michie & Abraham, 2008).

Research on effective MI techniques

Beyond the limited detail reported in interventions adopting MI, a further barrier to progress in understanding the effectiveness of MI-based interventions is the lack of research identifying the precise MI techniques that affect behaviour change. This has made it difficult to draw precise conclusions regarding how MI facilitates behaviour change. A systematic identification and classification of the techniques of MI is needed. Isolating MI techniques will enable researchers to better specify the content of their interventions and establish whether the inclusion or omission of particular techniques enhances or diminishes the effectiveness of their interventions using study designs that compare the intervention effectiveness in the presence or absence of specific techniques.

MI is primarily a counselling approach and a way of interacting with a client in health contexts (Miller & Rollnick, 2013). Central to its approach is the 'spirit' of MI, which is a collective term that encompasses the interpersonal or relational components of MI focusing on the actions of the practitioner in delivering intervention content to clients or individuals (Hagger & Hardcastle, 2014). Given its development in counselling and clinical practice, it is unsurprising that the effectiveness of MI is strongly influenced by the practitioner, that is, the relational components of MI. A recent systematic review and meta-analysis revealed that MI interventions with high treatment fidelity, defined as the practitioner's adherence to the relational components of MI, produced larger effects on physical activity behaviour change than interventions with lower fidelity (O'Halloran et al., 2014). These data provide initial indication that the interpersonal components are paramount to the efficacy of MI interventions.

According to Miller and Rollnick (2013), the 'spirit' of MI comprises four key components: collaboration, evocation, autonomy, and compassion. *Collaboration* refers to relations between the

practitioner and client grounded in the perspectives and experiences of the client. *Evocation* refers to drawing out the client's ideas about change. The practitioner draws out the client's own motivations and skills for change rather than tell them what to do or the reasons why they should do it. Promoting *autonomy* in the client refers to the practitioner ensuring that the decision to change rests with the client. The practice of *compassion* refers to the practitioner's acceptance of one's path and choices. The practitioner is committed to seek an understanding of the other's experiences, values and motives without engagement of explicit or implicit judgment.

An important relational-interpersonal component of MI is its client-centred focus on drawing out clients' ideas about change. Central to this is the evocation of 'change talk'. The evocation of change talk is a key component of MI and is defined as 'any self-expressed language that is an argument for change' (Miller & Rollnick, 2013, p. 159). One of the primary roles of MI practitioners is to elicit and evoke change talk and to reduce 'sustain talk': 'the person's own arguments for not changing, for sustaining the status quo' (Miller & Rollnick, 2013, p. 7).

MI also comprises components that relate to the content of the interventions, that is, what is delivered to clients rather than how it is delivered. Such components are akin to the techniques adopted in behaviour change interventions that have recently been classified in behaviour change taxonomies (e.g., Michie et al., 2013). This means that MI comprises components that include the content of interventions and the means by which the intervention is presented to the client, by the practitioner. We refer to the components of MI that specify the interpersonal style used by the interviewer or practitioner to deliver the intervention as 'relational' techniques. These relational techniques are fundamental to MI and their identification and isolation is important in order to fully break down MI into its individual components.

There is previous research work that has informed the classification of the components of MI, although none have adopted a systematic approach to isolate the components of MI. For example, evaluation of the fidelity of MI interventions has necessitated the identification of its components and skills. Assessing the fidelity of MI interventions has been achieved by identifying the extent to which practitioners adhere to the key conditions or parameters of MI. The MI treatment integrity and the MI skill code (MISC) are the two common instruments used to examine the fidelity of MI interventions (Moyers, Martin, Manuel, Miller, & Ernst, 2010). These instruments mainly measure overall competency of the interviewer with the main components of MI such as the practitioner's ability to cultivate change talk and soften sustain talk. They also assess adherence to the underlying spirit of MI in terms of collaboration, empathy, autonomy, and evocation. In addition, they assess the proportion of questions versus reflections, and the proportion of MI adherent versus non-adherent practitioner behaviours (e.g., emphasis of autonomy versus confronting and persuading language). The MISC also examines client language in relation to the expression of reasons to change, taking steps, and commitment language. These tools have been very useful in assessing the fidelity of MI interventions with respect to MI as an overall intervention and closeness with Miller and Rollnick's 'spirit' of MI. However, as their focus is on overall adherence to MI as stipulated in intervention protocols, the fidelity tools do not break MI down into specific techniques and are, therefore, not fit-for-purpose means for the isolation and classification of MI components.

In the current research, we recognise that although MI interventions have arisen from clinical practice, as an intervention approach it comprises multiple distinct techniques. However, the techniques have not been systematically identified and isolated in a process that aims to identify the individual techniques of MI based on procedures adopted in the behaviour change taxonomy literature (BCTTv1; Michie et al., 2013). The purpose of the current research is to specify the MI techniques to bridge the gap between MI as an intervention method born out of clinical practice and MI as a complex behaviour change intervention that comprises multiple techniques, both content and relational. In order to improve the effectiveness and efficiency of MI interventions, there is a need to identify and isolate the discreet techniques employed and assess which techniques, or combinations of techniques, are more effective in changing health behaviour. The research will also permit further testing of the mechanisms and process by which MI interventions exert their effects, by indicating the

specific mediating factors that may explain their effects, which will further improve understanding and efficiency of MI interventions.

MI techniques and existing taxonomies of behaviour change techniques

The relational components of MI are fundamental to its effectiveness as an approach to behaviour change and these relational techniques have tended to be neglected or omitted from previous behaviour change technique taxonomies (Hagger & Hardcastle, 2014). As taxonomies evolve, they need to identify and incorporate these relational techniques that fulfil the conditions to be satisfied for the intervention to be effective and determine whether they moderate the effect of the content-based techniques. There have been a number of previous approaches to examining the components of interventions related to interpersonal or presentation style. Kok et al. (2015) have highlighted the importance of *parameters* for a behaviour change method to be effective. According to Kok et al. (2015)

> parameters of effectiveness of a theoretical method are defined as the conditions that must be satisfied in practical applications for the method to be effective. If a practical application embodies a given theoretical method but violates one or more parameters of effectiveness of that method, it will be less effective or may even be counter-productive. (p. 5)

Similarly, Dixon and Johnston (2010) have identified foundation and behaviour change competencies required to deliver effective behaviour change interventions. One of the competencies identified by Dixon and Johnston is similar to Kok et al.'s (2015) parameters for an intervention is the 'capacity to implement behaviour change in a manner consonant with its underlying philosophy' (p. 8). The foundation competences primarily involve the communication skills necessary to develop an effective alliance between the practitioner and the client or target of behaviour change. For example, competencies relevant to MI include 'ability to engage client' and 'ability to foster and maintain good intervention alliance'. However, these competencies do not identify or isolate the particular techniques by which such competencies can be included or incorporated in interventions. Roth and Pilling (2008) also refer to the importance of generic components in the delivery of behaviour change interventions such as the generic skills of engaging client and maintaining a good therapeutic alliance.

Similarly, we view the generic components and competencies as skills or parameters that will enhance the effectiveness of interventions. However, while parameters are important aspects of interventions, we feel these are separate from relational techniques and we make a distinction between relational techniques and generic competencies. Our current research is concerned with the relational techniques rather than skills or competencies. For example, one competency identified by Roth and Pilling is the 'ability to work in a collaborative manner'. While generic competencies in the interviewer in developing collaboration with the client is at the core of the MI approach, we feel that the specific actions an interviewer would take to forge a collaborative alliance are separable and distinct from the generic skills, and that these constitute techniques that an interviewer would apply when conducting an MI intervention. The techniques are, therefore, separable from the parameters, the generic skills and competencies that assist interviewers in developing a collaborative alliance.

The present study

The purpose of the present study was to identify, isolate, and incorporate the techniques, both content and relational, that comprise MI interventions in health contexts. Such an endeavour is essential if the effectiveness of complex interventions that adopt both content behaviour change techniques and relational techniques are to be adequately evaluated. In this article, we will systematically identify MI techniques based on Miller and Rollnick's recent classification [1] and relate them to the behaviour change techniques in the BCTTv1 (2013).

The second purpose was to examine the relationship between the MI techniques identified in the present study and those identified in the BCTTv1 (2013) and identify MI techniques that are closely aligned with behaviour change techniques in the 93 BCTTv1 taxonomy and those that are unique to MI. The research will contribute to the literature in four ways. First, the identification of unique techniques will allow researchers to clearly specify MI-based interventions by isolating its basic techniques that cannot be broken down further. Second, the identification of, and distinction between, content-based and relational techniques means that researchers will have access to the essential 'building blocks' of MI interventions, and permit them to develop research examining the efficacy of the techniques alone or alongside or interacting with others in interventions seeking to change behaviour. Third, the identification of techniques may assist in developing more efficient and parsimonious interventions by reducing redundancy and focusing on the techniques that are most effective. Fourth, the identification of relational techniques that have been omitted in existing behaviour change taxonomies that focus exclusively on content will make a unique contribution to the literature by more fully documenting the techniques associated with the interpersonal components of the intervention. Such relational techniques could have broad appeal and do not need to be confined to MI but could be adopted in other behavioural change interventions regardless of theoretical persuasion.

Methods

Participants

Participants were 10 (7 female; *M* age = 40.50, SD = 5.50) international behaviour change experts (i.e., active in their field and engaged in investigating, designing, and/or delivering behaviour change interventions). We initially identified 12 experts as suitable candidates to participate in the classification and processes. Experts were identified from scientific networks (e.g., professional and scientific societies, authorship in leading articles in peer-reviewed journals) on the basis of knowledge of BCTs and/or experience of designing or delivering MI interventions. Of the 12 approached, 10 agreed to participate. The final number was considered appropriate to arrive at consensus and compares favourably to numbers of experts adopted in research using similar classification procedures (e.g., Michie et al., 2013; Roth & Pilling, 2008). Three resided in the UK, three in Australia, and one each in Poland, the United States, Canada, and Portugal. Six were health psychologists; two were exercise psychologists and two were practitioners with postgraduate degrees in exercise and health science. Six had completed the BCTTv1 online training and have certificates to demonstrate competency in coding behaviour change techniques in interventions. Of the four without BCTTv1 training, one serves on the International Advisory Board for the Theories and Techniques of Behavior Change Project (2014–2017); another is a registered psychologist with many years' experience with behaviour change interventions; the final two are researchers with expertise in conducting research on theory-based behaviour interventions. The authors participated in the coding exercise along with another six independent experts. A similar protocol was adopted by Roth and Pilling (2008) where three of the seven participants made up the project team. All participants had good working knowledge of MI and were behaviour change experts and half of the participants had designed and delivered several MI interventions (e.g., Fortier, Duda, Guerin, & Teixeira, 2012; Greaves et al., 2008; Hardcastle & Hagger, 2011; Hardcastle, Taylor, Bailey, Harley, & Hagger, 2013; Marques, Gucht, Leal, & Maes, 2014).

Procedure

The review involved three steps. The first step involved the identification of the distinct techniques that comprise the MI approach in behavioural interventions in health contexts. This was achieved by conducting a content analysis of Miller and Rollnick's (2013) conceptualisation of MI to identify the separate techniques that comprise the approach. The content analysis involved working through

the book systematically, section-by-section, and making a note of each MI technique introduced. The analysis was conducted by the lead author and two experts in MI. We did not use other sources to identify MI techniques within MI because Miller and Rollnick's recent conceptualisation offers the most recent formulation that takes into account the changes to MI since its inception. Furthermore, the updated conceptualisation includes adaptations to previous versions and uses new terminology. For example, previous conceptualisations of MI broke the process of change down into two phases: phase one, building motivation to change; and phase two, strengthening commitment to change. However, the more recent conceptualisation refers to four phases: engaging, focusing, evoking, and planning. In addition, technique labels were also updated. For example, the earlier technique of exploring the 'good things and less good things (about the status quo)' has been labelled as 'running head start' in the 2013 conceptualisation. Another example of technique labels that were updated is that of 'amplified reflection' which in 2013 is referred to as 'overshooting'. In order to maintain parsimony and homogeneity in terminology, we based the identification of techniques on the latest conceptualisation. For the purposes of the present analysis, an MI technique was defined as any single, component of MI that seeks to foster behaviour change or engage the client in the intervention. A content technique refers to an MI technique that focuses on the content of the intervention (e.g., goal setting). Relational techniques are defined as MI techniques that refer to interpersonal or delivery style and primarily signify the way in which content-based techniques are presented or delivered. Relational techniques also vary in their function in that may magnify or reduce the effects of content-based techniques. In order to qualify as an MI technique, the intervention technique must (a) contain verbs (e.g., provide, elicit, prompt) that refer to the action(s) taken by the counsellor or interviewer delivering the technique and (b) contain reference to performing a specified health-related behaviour or motivation (e.g., motivational, motivating, motivate) to perform a specified health-related behaviour. The specified behaviour(s) can be engaging in health-promoting behaviour(s) and/or refraining from, or avoidance of, health compromising behaviour(s). The content analysis was conducted independently by the lead author and another author without knowing each other's extraction of techniques. The two authors then compared notes, and discussed differences. The final document was sent to a third reviewer who reviewed the decisions made and approved or suggested modifications. In relation to the content of discussions between the lead author and two experts, it was an interactive, iterative process in which the lead author initially developed the list that was subsequently checked by two others for agreement and discussion with continued iterations until any discrepancies were eliminated and agreement was reached. Any discrepancies were discussed until agreement was reached. For example, the lead author initially coded 'develop discrepancy' as an MI technique but following discussion, it was agreed that it was in fact a parameter and not a technique of itself. The specific techniques to develop discrepancy included values exploration and looking forward as examples.

The second step involved collating each MI technique alongside a clear definition derived by expert consensus. The definitions for each technique were taken from Miller and Rollnick's latest conceptualisation. The table was circulated to 10 independent experts who were asked to code the definitions according following questions: (a) 'Please indicate whether the MI technique is relational or content-based'; (b) Are you are satisfied that the MI technique is conceptually unique within MI? with responses made on a three-point scale with 1 corresponding to 'unique', 2 corresponding to 'redundant', and 3 corresponding to 'overlapping'; 'If you consider the technique redundant or overlapping with others, please explain why'; (c) 'Does the list omit any other techniques that you consider part of MI? If so, which?' The second step included two rounds of coding/re-coding and feedback prior to the final list. In the first round, some techniques were dropped due to overlap. For example, the technique 'imagined future if status quo is sustained' was dropped because it was considered the same technique as 'looking forward' and another technique 'identifying strengths and past successes' was broken down into two separate techniques: 'identify strengths' and 'identify past successes'. Also, 'offer emotional support' was considered to include three separate techniques and was subsequently broken down into affirmation, review outcome goal and offer emotional

support. An additional six techniques that were not identified in the first round were added to the list of MI techniques and circulated to the experts for coding including: affirmation, hypothetical thinking, normalising, overshooting, undershooting, double-sided reflection, and review outcome goal.

The third step of the review involved undertaking a direct comparison of the constructed list of techniques used in MI and comparing each technique with the BCTTv1 (2013). The aim was to identify techniques that could be closely aligned with those outlined in the existing taxonomy and to identify techniques that appeared to be unique to MI and not included in the existing taxonomy. The independent experts were emailed the table of MI techniques along with definitions for the 93 existing BCTs (supplemental online material from Michie et al.) and asked to independently code the MI techniques alongside the taxonomy, with a view to identifying techniques that were unique to MI and those that were closely aligned in content with existing BCTs. The independent experts were instructed to evaluate each MI technique by responding to the following questions: (1) Please indicate whether you are satisfied that the technique is conceptually unique (score 1 for unique, 2 redundant, 3 overlapping); (2) Taking each one in turn, do you think the technique is clear, precise, and distinct (each a separate score) (1 = definitely yes, 2 = probably yes, 3 = not sure, 4 = probably no, 5 = definitely no). The final question was used to evaluate the uniqueness of the technique in comparison to the BCTTv1. Specifically, experts were asked: 'Do you think the technique can be matched to an existing behaviour change technique from the 93 taxonomy? (coded 1 = yes, 2 = no). If raters responded 'yes' to question 2, they were asked to identify the overlapping technique from the BCTTv1 and provide a justification. Participants' consensus in coding the set of techniques as unique, clear, precise, and distinct was established through intra-class correlation (*R*) and its 95% confidence intervals (95% CI) across techniques and raters.

Results

The list of MI techniques with definitions and examples developed from the content analysis of Miller and Rollnick's (2013) conceptualisation can be found in Table 1. Our initial content analysis identified 38 separate MI techniques. The analysis identified 16 relational and 22 content-based MI techniques. In Table 1, these techniques have been allocated to the four phases of MI: engaging, focusing, evoking, and planning. The 10 raters independently evaluated whether each of MI techniques identified in the content analysis was independent and 'standalone' and flagged any overlap or redundancy across the MI techniques and the behaviour change techniques from the BCTTv1. Intra-class correlations (*R*) revealed that participants exhibited good consensus on ratings of uniqueness ($R = .829$, 95% CI [.738–.898], $p < .001$), clarity ($R = .747$, 95% CI [.656–.838], $p < .001$), preciseness ($R = .806$, 95% CI [.702–.804], $p < .001$), and distinctiveness ($R = .936$, 95% CI [.901–.962], $p < .001$) for the techniques. Of the 38 MI techniques, 16 were considered to be conceptually equivalent in content to behaviour change techniques in BCTTv1.

Table 1 provides a concise overview of the identified MI techniques, according to stage: engaging, focusing, evoking, and planning identified by Miller and Rollnick (2013). A more detailed overview of MI techniques with further examples is provided as an online supplemental table (see Appendix A in online supplemental materials). Within Table 1, the motivational techniques within MI considered to overlap with those from the BCTTV1 are displayed in a bold typeface.

Four MI techniques were deemed to have some partial overlap with existing behaviour change techniques. However, we opted to keep them separate and classified as unique to MI. These were *elicit-provide-elicit* that shared with some similarities to 'information on health consequences'; *affirmations* with some similarities to 'verbal persuasion about capability'; *hypothetical thinking*, with some similarities to 'mental rehearsal of successful performance'; and *consider change options*, with some similarities to 'action planning'. Our rationale for retaining each of the four techniques as unique MI techniques is provided as an online supplemental table (see Appendix B in online supplemental materials).

Table 1. Summary of MI techniques.

Technique number	Technique	Definition	Example of technique	Technique defined as content or relational
Engaging techniques				
1.	Open-ended questions	The counsellor asks questions that cannot be answered with a limited response (i.e., yes, no, maybe, twice).	'What have you tried before to make a change?' and 'How can I help with xxx?'	Relational
2.	Affirmation	The counsellor provides a statement of affirmation that acknowledges the client's difficulties, efforts and self-worth.	'I've enjoyed talking with you today'	Relational
3.	Reflective statements	The counsellor paraphrases client comments by repeating back what the client has said.	Simple reflections: 'It sounds like you … ' or 'The message I'm getting is that … '	Relational
4.	Summary statements	The counsellor pulls everything together that the client has said and offers a summary.	'So on the one hand you feel that xxx and on the other xxx'	Relational
Focusing techniques				
5.	Agenda mapping	The counsellor prompts the client to consider the way ahead and which behaviour they are motivated to discuss.	'I usually talk to people in a situation like yours about diet, exercise, that sort of thing. Which of these do you feel you would like to talk about?'	Relational
6.	Review a typical day	A prompt from the counsellor to build rapport while collecting information.	'Can we spend the next 5 minutes going through a typical day for you from beginning to end, and where (behaviour) fits in?'	Relational
7.	Permission to provide information and advice	The counsellor obtains the permission of the client before providing information or advice.	'Would it be helpful if I tell you what has worked for other people or what they have found useful?'	Relational
8.	Elicit-provide-elicit	The counsellor first elicits the client's understanding and need for information, then provides information in a neutral manner, followed by eliciting what this information might mean for the client.	'Tell me what you already know about type II diabetes?' (counsellor elicits) 'I'd like to share with you some information about what diabetes is and how it can be most effectively managed. Would that be ok with you?' (counsellor seeks to provide)	Content
Evoking techniques				
9.	**Running head start**	A strategy for eliciting client motivational talk in which the counsellor asks open questions to first explore the perceived 'good things' about the status quo, in order to then query the 'not so good things 'about the status quo.	'What are the good things about (the status quo)?' 'What are the not so good things about (the status quo)?' 'What are the not so good things about changing (behaviour)?'	Content
10.	Importance ruler	The counsellor asks open questions, using an importance ruler to explore the client's motivation in terms of how important it is to make a behaviour change. A scale (typically 0–10) is often used to ask clients to rate the importance of making a particular change.	'How important would you say it is for you to xxx?' On a scale of 0–10, where 0 means not at all important and 10 means 'the most important thing for me right now', how important would you say it is for you to xxx?'	Content
11.	Confidence ruler	The counsellor asks open questions, using a confidence ruler to explore the client's motivation in terms of how confident they are to make a behaviour change. A scale (typically 0–10) is often used to ask clients to rate their confidence in making a particular change.	'Again if 0 stands for not at all confident and 10 stands for very confident, what number would you give yourself and why?'	Content

(*Continued*)

Table 1. Continued.

Technique number	Technique	Definition	Example of technique	Technique defined as content or relational
12.	DARN questions	The counsellor uses DARN questions (open-ended questions) that seek to elicit four subtypes of client motivational talk. These four subtypes are: Desire, Ability, Reason and Need.	'What do you hope our work together will accomplish' (D) 'How would you do it if you decided to' (A)	Content
13.	**Looking forward**	The client is prompted to envision two possible futures. The first 'future' is if they continue on the same path without any changes where they might be five or ten years from now. The second future is if they decide to make a change, what their future might look like.	'If you were to change what would it be like?' How would you feel? How would things be different?'	Content
14.	Looking back	The client is prompted by the counsellor to talk about what life was like 'before'. The goal is for the client to observe how they have changed over time which may enhance motivation to return to a previous way of being.	A client may say: 'I wasn't always this way' and the counsellor may say: 'It sounds like things have changed over time. Tell me about your eating habits back then'.	Content
15.	Hypothetical thinking	The counsellor prompts the client to adopt hypothetical thinking to elicit ideas about behaviour change.	'Suppose that you did decide to change (behaviour) how would you go about it?'	Content
16.	**Query extremes**	A technique used to evoke change talk by asking clients to imagine best consequences of change or worst consequences of status quo.	'Suppose you did not change, what is the WORST thing that might happen?'	Content
17.	**Identify past successes**	The counsellor prompts the client to think about previous successes at behavioural changes to build confidence for change.	'What have you learnt from previous attempts to change?'	Content
18.	**Identify strengths**	The counsellor prompts the client to draw out their strengths and the relevance of these strengths to making successful behavioural changes.	'What are your key strengths?'	Content
19.	Brainstorming	The counsellor prompts the client to generate a menu of options.	'What are your ideas about how you could change (behaviour)?'	Content
20.	**Troubleshooting**	The counsellor prompts the client to think about potential barriers and identify ways of overcoming them in order to strengthen motivation.	'Suppose that this one big obstacle weren't there. If that obstacle were removed, then how might you go about making this change?'	Content
21.	**Values exploration (open or structured)**	The counsellor prompts the client to explore his or her values and how the behaviour fits in with these values. The counsellor may ask the client to describe their main goals and values in life. For structured values exploration, see Appendix A.	'What things are most important to you?' or 'What do you most want in life?' and 'How do your eating practices fit in with your goals and values?'	Content
22.	**Reframing**	A counsellor reflective statement that invites the client to consider a more positive and motivational interpretation of what has been said.	'I can't do it' to 'So you find it difficult to … '	Content
23.	Double-sided reflection	The counsellor provides a double-sided reflection to capture client ambivalence and communicate to the client that the counsellor heard their reasons both for and against change.	'On the one hand, you would like to change XX, but on the other hand changing XX would mean giving up Xx' or 'you are torn about changing xx'	Relational
24.	Emphasise autonomy	The counsellor provides a statement that directly expresses motivational support, acknowledging the client's ability for choice and self-determination.	'Do you have any ideas on how we may resolve this dilemma?'	Relational

25.	Overshooting	Overshooting is a motivational technique provided by the counsellor to argue against change by exaggerating the benefits of or minimising the harm associated with a risky behaviour.	'So you see no benefit in changing XX' or 'XX is all positive for you'. The counsellor, by arguing against change can exhaust the client's negativity.	Relational
26.	Undershooting	A reflective statement, provided by the counsellor that understates slightly what the client has offered. By slightly understating the expressed intensity of emotion, the client is more likely to continue exploring and telling the counsellor about it.	The client says 'I'm out of breath even walking up the stairs' and the counsellor responds with: 'You're beginning to notice that everyday activities are more difficult'	Relational
27.	Coming alongside	A counsellor response to persistent resistance talk or discord in which the counsellor accepts and reflects the client's resistance.	'Perhaps now is not the right time to be thinking about change?'	Relational
28.	Shifting focus	A counsellor responds to discord and low level of motivation by redirecting attention and discussion to a less contentious topic or perspective.	'Since you've been forced to come here, what would you like to do with the time we have left together today'	Relational
29.	Agreement with a twist	A reflection whereby the counsellor reframes a negative comment by the client into a more positive response.	'I have no will power' to 'So you're saying that you have little confidence'	Relational
30.	**Normalising**	The counsellor communicates to clients that having difficulties while changing is not uncommon.	'Many people report feeling like you do. They want to lose weight, but find it difficult'	Content
Planning techniques				
31.	**Explore change expectations**	The counsellor prompts the client to identify the outcomes that the client expects to achieve based on the changes that they are motivated to make.	'Thinking about the benefits of (behaviour) that you've just been describing, what kinds of changes to your current level of (behaviour) are you prepared to make?	Content
32.	Consider change options	The counsellor prompts the client to consider change options in a neutral and supportive manner.	'How might you go about xxx?	Content
33.	**Develop a change plan (CATs)** C = Commitment A = Activation T = Taking steps	The counsellor prompts the client to develop a specific change plan that the client is motivationally ready to accept.	'What do you intend to do specifically?' © 'What would be a good first step?' (A) 'When and how will that step be taken?' (T)	Content
34.	**Goal attainment scaling**	A way to specify degrees of change towards the goal and focus motivation using a −3 to +3 scale where 0 is the status quo at the outset. The counsellor prompts the client to rate their goals on a scale ranging from the best possible outcome to the worst possible outcome.	Rate a weight loss goal on a scale ranging from −3 (most unfavourable outcome): gain 5 kg in one month to +3 (most favourable outcome): lose 5kg in one month where 0 is the status quo (remain at current weight)	Content
35.	**Support change/ persistence**	The counsellor functions as a partner or companion, collaborating with the client's own expertise.	'How can I best support you?'	Relational
36.	**Offer emotional support**	The counsellor offers reassurance, to the client.	'I appreciate how difficult this is'	Relational
37.	**Review outcome goal**	The counsellor asks the client how they are progressing with their goals.	'How are you progressing with your goal?'	Content
38.	**Summarise the plan**	The counsellor summarises the change plan including the specific behavioural goals, the reasons for making the change, the specific steps to be taken, the outcome goals and coping planning for relapse prevention.	'So you've decided you are going to … This is because … ' 'Specifically, you are going to … You will know if the plan is working if … '	Content

Note. Techniques in bold typeface overlap with techniques from BCTTv1.

Sixteen of the MI techniques were matched, with complete consensus among participants, to techniques from the BCTTv1 and the matches are displayed in in Table 1 in a bold typeface. It should be noted that all of the MI techniques that were matched to a technique from the BCTTv1 were content-based with the exception of *offer emotional support*.

Discussion

MI is recognised as an important approach to behaviour change in multiple health contexts (Armstrong et al., 2011; Befort et al., 2008; Bennett et al., 2007; Carels et al., 2007; Hardcastle et al., 2008; Heckman et al., 2010; Jenson et al., 2011; Lai et al., 2010; O'Halloran et al., 2014). MI has also been recognised as a complex approach to interventions comprising multiple techniques (Michie et al., 2013; Miller & Rollnick, 2013). We contend that if knowledge of the effectiveness of MI-based interventions is to be improved, the identification and isolation of the individual MI techniques that lead to health behaviour change and cannot be further reduced to smaller components is needed. Our aim was to identify the unique techniques that comprise the MI approach which have, thus far, not been identified in the research literature. A further goal of the current research was to make the distinction between techniques that relate to the content of interventions that change behaviour and techniques that focus on the interpersonal or relational style adopted by the practitioner delivering the intervention. The literature on MI places considerable emphasis on relational techniques and it is an essential part of the approach (Miller & Rollnick, 2013). A key aim of the present study was, therefore, to identify the unique techniques used in MI and examine the relationship between the MI techniques and those in the BCTTv1 (2013). Our content analysis identified 38 discernable, separate techniques within MI and the participating experts ($n = 10$) exhibited good consensus on ratings of clarity, preciseness, and distinctiveness across the techniques. Of the 38 MI techniques, 16 were conceptually matched by consensus to techniques from the BCTTv1. Twenty-two of the MI techniques were classified as 'content' based and 16 were classified as relational.

Given that almost half of the MI techniques were classified as relational, it seems that intervention approaches like MI that are delivered by a practitioner should pay close attention to the role of relational techniques in promoting behaviour change (Hagger & Hardcastle, 2014). To date, techniques classified in behaviour change taxonomies focus exclusively on intervention content and do not include the interpersonal aspects of interventions. One of the defining features of MI and its techniques is the prominence afforded to interpersonal style, that is, the manner or 'way' in which intervention content is delivered or expressed to clients. The relational techniques are likely to interact with other content-only behaviour change techniques in affecting behaviour change. The relational techniques are likely to be parallel to techniques that focus exclusively on content such that an intervention will combine content and relational techniques to maximise effectiveness. We have explicitly made the distinction between relational and content-based techniques in our identification of techniques arising from the MI approach.

Our research builds on and extends previous work that has attempted to identify the competencies, foundations and parameters required for the delivery of effective behaviour change interventions (Dixon & Johnston, 2010; Kok et al., 2015; Roth & Pilling, 2008). Previous work has identified specific competencies, in particular, the communication skills necessary to develop an effective alliance. However, the previous research did not identify or isolate the particular techniques that would manifest such competencies. For example, Roth and Pilling (2008) identified the ability to work in a collaborative manner as a core competency but did not isolate the techniques that could be adopted to promote better collaboration in practitioner–client interactions. The present study has identified the following relational techniques within MI that focus on fostering collaboration: agenda mapping, typical day, and permission to provide information. The present study makes a unique contribution to the literature by identifying and isolating the relational techniques that demonstrate such competencies. Many of these relational techniques could have a wider appeal than MI and be used

effectively to engage clients in many other behaviour change interventions. Future research needs to determine whether the relational techniques moderate the effect of the content techniques, and the current analysis provides researchers with the tools to do so.

Michie et al. (2013) acknowledge that 'mode and context of delivery, and competence of those delivering the intervention would … benefit from being specified by detailed taxonomies' (p. 93). In the current research, we made the distinction between content and delivery components and classified them as separate content and relational techniques within MI. Such a distinction has not been made in previous taxonomies, and we view the inclusion of relational techniques as a step forward in the development of a comprehensive organisation of the components MI interventions. We also expect these findings to make a contribution to taxonomies of behaviour change techniques in general as the inclusion of relational techniques may assist in further developing the sets of components that comprise behaviour change interventions. Descriptions of content-only behaviour change techniques, such as goal setting, do not capture the relational components of the intervention by which that content could be delivered. For example, goal setting could be delivered empathetically using open-ended questions, affirmation and reflections, or delivered didactically using pencil and paper methods. We have demonstrated that experts can and do make the distinction between relational and content, and that MI comprises separate sets of individual techniques in both categories.

We have identified that 22 of the techniques within MI are unique and do not appear to have any overlap with behaviour change techniques in existing taxonomies. The majority of the unique MI techniques can be found in the engaging and evoking phases of MI that seek to establish a rapport between client and practitioner and seek to increase client-change talk and confidence for change, respectively. The other techniques identified as unique to the existing taxonomy are those that are relational and seek to reduce sustain talk and develop discrepancy between current behaviour and goals and emphasise collaboration, acceptance, and client autonomy. The relational techniques of MI identified in the current research could feasibly pave the way for a systematic evaluation of the effects of the relational techniques alongside content-based techniques to determine how the techniques act together to bring about health behaviour change. For example, open-ended questions can be used 'to engage the client', but can also be used to explore past experiences, explore possible reasons for wanting to change (or not) and as a way of delivering almost any intervention whether MI or not. These relational techniques could also be used in any behaviour change interventions regardless of its theoretical persuasion.

Our current analysis focused on the identification of MI techniques rather than mechanisms of change. Future work should further explore the mechanisms of change in MI, and identify the likely candidate mediators. Such mediators are likely to include self-efficacy, development of discrepancy, increased client-change talk, reduced client sustain talk, autonomy, relatedness, and commitment. We expect our current work to pave the way for research that taps these mechanisms. The development of experimental or intervention research that uses factorial designs to systematically test the effect of the presence or absence of isolated techniques from MI on health behaviour, and the psychological factors that mediate the effect, will move the field forward in providing mechanistic explanations.

In terms of future research using the proposed set of identified MI techniques, it should be made clear that an MI intervention does not need to use every technique that has been isolated in the current analysis. Further, it is important that authors explicitly mention all of the isolated MI techniques adopted in an intervention as the techniques used can only be coded using the taxonomy when they are explicitly mentioned in the intervention description. Failure to list the techniques used in an intervention explicitly would impair the ability to researchers to identify the specific MI techniques used in the intervention and, as a consequence, inhibit efforts to compare and contrast the techniques of different MI interventions.

Conclusion, strengths, and limitations

Behaviour change interventions adopting MI are usually complex and a description of its components via a simple 'absent' versus. 'present' distinction is inadequate and prevents the identification of the effective components and processes by which the intervention leads to behaviour change. Such limited descriptions hinder the advancement of behavioural interventions. We propose that descriptions of MI interventions should identify the unitary techniques that comprise the interventions. Based on current findings, such a description should entail both content and relational components, that is, individual techniques that relate it to what is included in an intervention and how it is delivered. Our proposal is that MI comprises multiple techniques that can be content or relational. Behaviour change technique taxonomies are generally silent on techniques that relate to the style of delivery of behaviour change intervention content. Such techniques have been excluded from existing BCT taxonomies as only techniques that target the key behaviour are coded. The study reports important findings showing that there are additional techniques that should be specified in addition to behaviour change techniques, if we are to fully describe interventions. The effectiveness of MI in changing behaviour is likely the result of interactions between content and relational techniques. Isolating the components of MI into multiple standalone techniques (Table 1) represents an initial step toward the identification of a 'MI taxonomy'. If the techniques of MI responsible for behavioural engagement and change can be isolated, then more efficient MI-based interventions that are likely to be effective in bringing about behaviour change can be developed. We also anticipate that the relational techniques identified in our analysis could have wider appeal and be adopted in a broad spectrum of behaviour change interventions using other 'content' based behaviour change techniques.

The analysis presented here is not without limitations. First, our analysis relies on one source of MI (Miller & Rollnick, 2013) and could have been derived from further sources, although Miller and Rollnick's (2013) conceptualisation of MI is drawn from updates in research and practice. Another limitation is that our analysis is not a definitive account and other interpretations may exist. We do not see our analysis as being definitive on the issue of the classification of MI techniques. Rather, we view our classification as one that is flexible and modifiable, that can be reviewed and updated as MI progresses and changes with practice. However, we have attempted to offer a credible account of MI techniques through using multiple experts and a rigorous consensus process.

We encourage researchers to use our analysis of MI techniques to develop intervention studies with factorial designs using specific techniques from MI in isolation and in combination. For example, the effectiveness of content-related behaviour change techniques alone or in combination with relational techniques would assist in identifying which techniques, or combination of techniques, is most effective. The development of an evidence base will also have important implications for practice, particularly in assisting practitioners using MI to adopt the appropriate isolated techniques likely to be most effective in changing behaviour (Douaihy et al., 2014).

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